The Builder.

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The Second Report on Government Offices Sites.

THE second and final Report of the Government Offices Sites Committee, with the evidence, is now published, and leaves the matter just where it was. The evidence and Report taken together form only one more illustration of the curious spirit in regard to such questions which prevails in England, and of which the two prominent articles of faith seem to be, that in erecting national buildings limitation of cost is the first thing to be considered, and that in regard to the architectural treatment of sites and buildings anybody's opinion is of more value than that of an architect. The Institute of Architects have done their best, as Barry did his best a generation before, to get a great public improvement carried out on a grand scale, and with the same result—that nothing they say is listened to, and that the Committee are to be told by Mr. Shaw Lefevre, whose opinion on architecture is worth nothing whatever, that he has the strongest possible objection to their scheme from every point of view. But in England it is supposed that the fact of being a prominent Member of Parliament and having held office in the Government constitutes a man an authority on all the fine arts, and architecture most of all.

In an article in the *Builder* for October 3, 1896, we gave the main points of the plan proposed by the Office of Works for dealing with the sites for new Government offices, and pointed out some objections to them, especially in regard to the proposed War Office site, and the absurdity of the small triangular building proposed to be erected at Spring Gardens. In regard both to this latter and the War Office we pointed out that the practice of setting out streets, and then letting the irregular space left between them define the outline of an important building, was exactly the reverse of what ought to be adopted; that the building ought to be planned and designed in the best possible way for its purpose, practically and architecturally, allowing for the necessary roads round it to be arranged in accordance with its lines, instead of merely leaving irregular spaces and building on them. We also considered the question of the two methods proposed of setting out the new building at the juncture of Parliament-street and Great George-street, that of keeping the line of the Home Office front, or of turning back the frontage line at an oblique angle, with the object of getting a better view of the Abbey, and we showed that the oblique line presented every possible disadvantage in an architectural and practical sense.

This latter view the Committee, we are glad to find, has also adopted, as will be seen in the wording of their Report given on page 495; and they have further recommended that the angle of the new building should be square and not rounded off as on the original plan; and in this also we quite agree. Considering the great width of the new roadway, the rounding off is unnecessary and presents no architectural advantage. We may observe also that the proposed building on the small triangular site at Spring Gardens may be said to be practically abandoned; it is at all events postponed for further consideration, and we shall probably hear nothing more of it.

In regard to the façade of the new offices towards Parliament-street there was one suggestion made in the Institute of Architects' plan which was the subject of a good deal of evidence and discussion. The line of the Home Office front is a little in advance of that of the Treasury buildings, and the Institute proposed that the new front should be set back from the Home Office line to the same line as the Treasury façade, so that what now appears an accidental irregularity should appear to form part of a symmetrical scheme, the Home Office front appearing as a slightly advanced centre between the Treasury front and the new building. There is certainly something to be said for this suggestion, which is an ingenious one, but we are inclined to think it looks more valuable on paper than it would be in reality, because, there being only a street in front, though a wide one, there is hardly space enough in front for this grouping to have its effect and to be taken in by the eye as a whole. As was suggested in the course of the evidence, the effect to any one coming down Parliament-street on the west side would be that the street ended with the southern angle of the Home Office, which would shut out the new building, on its recessed line, from view. The arrangement would also perhaps necessitate, for its complete effect, an architectural treatment for the new building nearly similar to and repeating the main horizontal lines of the Treasury, and that might inconveniently hamper the design of the new building. On the whole we think the Committee were right in deciding against this proposal, and ruling that the new front should continue the line of the Home Office front, which they did after giving the point, it must be admitted, full consideration. Mr. J. O. Scott, who is naturally considerably interested in anything regarding the new surroundings to be given to the building designed by his father, made a plea in his evidence for the proper completion of the façade of the Home Office by the two towers or pavilions which it should have had over the angles; and it is to be hoped this will not be lost sight of. We do not greatly admire the Home Office, but it would be at least fair to its late eminent architect that the design should be completed as he intended it, and it would be a very fitting reason for doing so that the building is now to stand centrally between the other important buildings, and therefore requires to be emphasised as much as possible, to keep its place architecturally.

The Institute plan revives the old suggestion—at least half a century old—that the whole of the ground along the north side of Great George-street, up to St. James's Park, should be occupied by Government offices. Mr. Macvicar Anderson, in his evidence, admits the difficulty created by the erection of the new building of the Institution of Civil Engineers, as to which he observes, quite truly, that it was very unfortunate that it should ever have been allowed to be placed there, but suggests that the new buildings could be carried round it and the front incorporated with them. This, though not very satisfactory, is quite possible, and we are inclined to think that this is what will eventually be done. The last paragraph of the Report (page 495) is evidently intended to leave this point open for future consideration. Another point in the Institute plan, which the Committee have not recommended, is the formation of a strip of

lawn or plantation down the centre of the widened Parliament-street, partly as a division of traffic, partly as a means of beautification. In Paris, under similar circumstances, such a suggestion would almost certainly have been adopted. The road is quite wide enough to spare it; but in London the official mind never seems to realise the value of getting a little bit of garden or plantation in where it can be managed.

The efforts of the Institute to get a hearing for the re-alignment of Whitehall by rebuilding the western side, so as to bring the street central with the axis of Trafalgar-square, fell on deaf ears, as we knew they would, on the sole question of economy. It would unquestionably cost a great deal, but it would be one of the greatest architectural improvements ever made in London, and we are inclined to think that if the idea had been once brought home to the public mind, as a feasible as well as a grand scheme, it is very possible that there would have been a certain public enthusiasm in favour of it. But when the public have it persistently sounded in their ears, by their Parliamentary representatives and the Government, that there is nothing like economy, and that a great public improvement is never worth a great outlay, of course they come to adopt that position as an article of faith. The Institute plan is, to form a kind of long *place* on the axis of Trafalgar-square, with plantations down the centre, extending southwards as far as the Horse Guards, where the west side of the *place* would be returned at a right angle to meet the line of Whitehall at that point. The street therefore would not leave the *place* on the axial line, but at one side; but this would be so far down from Trafalgar-square that the departure from the axis at this point would not be very noticeable, especially as it would be masked by the plantations in the centre of the *place*. This plan of the elongated *place*, as one witness pointed out to the Committee, was not new, as it was a feature in Barry's Westminster Improvement Scheme, the greatest London improvement scheme of the greatest English architect since Wren. Perhaps the scheme suggested in Mr. Statham's paper at the Institute, viz., to start Whitehall from the axis of the Square, but to give it a slight angle to meet the line of the lower portion of the street, had some advantages over the Institute plan, though we do not say that it is to be preferred as a whole. The point is, however, that the widening of Whitehall should be on the west side, in order to get it central with Trafalgar-square. Yet all the Committee and all the non-professional witnesses as well as one professional one (Mr. Edis) kept harping on the advantage of widening Whitehall on the east side, merely because the expense was less, not seeing apparently, that as far as alignment goes that would be only making matters worse. But in London it seems impossible to get people to see these things.

In regard to the War Office, the Committee have persisted in their view that the triangular Carrington House site is sufficient for the purpose, and have elicited from one architectural witness (Colonel Edis) that "a decent building could be put up on the site" as shown in the Office of Works plan. So it could; but just consider how significant the phrase is, and what we have come down to. In the old competition of 1856, for War Offices and Foreign Offices, the whole world were invited to send in the finest designs they could create. Out of that competition the present Foreign Office arose, and though the result is not very remarkable, it was meant to be so; the intention was to have as grand and impressive a building as possible. But now the gentlemen who manage these matters are content if they can extract an admission from an architect that "a decent building" could be produced on the site they propose for the national War Office; that is all we are to soar to. It is truly pitiable. Not only have the Committee absolutely pooh-poohed the two suggestions made by the Institute for a building on a grand and impressive scale, but they could not even accept the slight and very clever modification proposed in Mr. Edis's plan, which would have given them a building with the two sides parallel and with a considerably increased area for building and courtyards, at a very moderate extra cost. Mr. Edis's proposal was to turn Whitehall-place a little northerly, at an angle which would bring it out centrally opposite the Admiralty screen, and give the site a northern margin parallel with that adjoining Horse Guards-avenue. This would be at all events a great improvement, and would combine with it the retention of Whitehall-place, which some witnesses profess to find so important for traffic, though in reality it is nothing now but a cab-stand. However, Mr. Edis's plan obviates this objection and provides for a better building at the same time, and he is to be congratulated on a very clever suggestion, which would at least be an important improvement on the Office of Works plan.

From the wording of the Report the Committee seem to have left it open to depart from the precise boundary line of the building as shown on the Office of Works plan. This point was touched on in the evidence given by the editor of this journal at the last sitting of the Committee. He said (answer to question 867):—

"You show on the plan the three streets laid out there, and you take the curb line of the streets, and you say, 'that shall be the outline of our building.' Now, what I want to urge is the obliteration of these lines, and, supposing you have that space to put a building on, to design the building in the best possible way architecturally, and let the curb lines follow the building, so that the building should be free to take its own shape. Carrying it round the curb lines is simply making it street architecture, ... and I must say I never saw a plan for a great public building made on such a system as that. . . . . The building should be left free to take its own shape as an architectural creation. . . . .

868. Practically, that the building should not necessarily depend on the shape of the street lines; is that what you mean?—Quite so.

Mr. Legh.

869. Not to treat it from a surveyor's point of view?—Exactly.

Chairman.

870. Do you mean, to deal with it as a vacant site, and put a good building on that site irrespective of the curb line?—Yes."

After this evidence, assurances were given that whatever architects were employed by the Government would not be tied to the lines of the plan at all, and it is well that such an assurance should have been elicited; nevertheless, we have not the slightest doubt that if the commission had been given to the Office of Works to carry out the building, before this last evidence and before the paper at the Institute was read, it would have been built on the lines shown in their plan. As it is, it is probable that some improvement will be made on the crude suggestion originally put forth; but at the best it will be found that the site is too confined for the building, both in an architectural and practical sense, as the Government will probably discover as soon as the building is completed, and when it is too late to remedy the mistake.

FIRE TESTS AT HAMBURG.

SOME time back (July, 1893) we referred to a very practical series of fire tests which were undertaken at Berlin at the instigation of a special commission of experts and officials, architects, and insurance agents, interested in the subject. The amalgamated German insurances companies had offered some prizes for these tests as far back as 1889, when the Accident Prevention Exhibition was held at Berlin. Financial difficulties, however, prevented their taking place until 1893, for there was a very considerable expense to be met if a satisfactory imitation of the state of affairs under which materials have to stand in reality was to be attempted. Special buildings have to be erected, or, at least, materially altered to fulfil the particular purpose of the experts. At Berlin the municipality finally offered one of its old warehouses for the tests, and also arranged for the co-operation of the Police Fire Brigade, so that neither the buildings nor the services of the firemen had to be paid for. From time to time, since the Berlin experiments, we have also heard of a very systematic series of tests arranged at New York, where similarly an independent commission has taken the matter up. Here again, the insurance companies have been playing an important part in the work. There have been likewise a number of minor tests in several Continental towns from time to time, though the reports have not always reached this country. Everywhere these tests have been most instructive, and everywhere we find that the results have been reported in a thoroughly reliable manner. The latter point is perhaps the most important, for we are all too prone to be suspicious of tests. It is only where the independence of those who have to give the decisions is assured that tests are likely to influence public opinion.

Now we again hear from Hamburg of a series of fire tests which have been undertaken at the instance of the Hanse Government, with a view of determining the method of constructing warehouses in the great free port. Hamburg has always been very susceptible to fires, and the class of property there in many ways resembles that of London. The warehouse district, though modern, is particularly liable to serious conflagrations, and this, to a great extent owing to architects and engineers having thought fit to introduce unprotected iron stanchions and girders in the many new warehouses erected at the end of the eighties; although at that time the Hamburg experts in fire-protection were as fully aware as we were of the necessity of covering iron-work if there is to be any attempt at resisting the effects of fire. But in practice our knowledge was, similarly, but seldom applied. The experiments at Hamburg have been spread over many years, commencing in 1891, and the interim report was already issued in 1894. Another report has been published lately.

According to these reports we find that light wrought-iron uprights first seem to have the attention of the authorities, and were most carefully tested in every direction; various forms of construction were tried, as well as various kinds of metal. The iron framing was also tried with concrete filling, and then again with various descriptions of protective coverings, such as plastering, zinc, asbestos, and silicates. The next series of tests was made with timber uprights, and here again various kinds of wood were first tested without any protective covering, and then again the same kinds of wood with various descriptions of covering. The last set of tests was with cast-iron stanchions. There was a special installation of testing machinery, a most careful record was kept of temperatures, and the authorities did not omit to give the "natural" tests of cold water, falling loads, &c.

We cannot here record all the methods of testing adopted, or give in details particulars of the systematic manner in which the experiments were made. For first-class systematic research in questions of fire-resisting construction, we can always rely on the German authorities being painstaking and methodical, almost in excess. The constitution of the Commission, however, may call for comment, as it gives an insight as to the ideas with which the tests were undertaken at Hamburg. There were no less than ten representatives of the Hamburg Board of Works on the Commission, including Herr Andreas Meyer (the City Engineer) and Herr Zimmermann (the City Architect). There were two representatives of the Building Act Department, the Chief Officer of the Fire Brigade (Herr Westphalen), the Superintendent of the Municipal Insurance Office, and the Lighting Inspector. Hamburg knows how to undertake work of this kind better, perhaps, than any other Continental city. When we have our Cripplegate fire, we see their Chief Officer of the Fire Brigade over here, with a member of the Public Works Committee, and a superintendent of the Municipal Insurance Office. They visit London to see where the mistakes have been made. They wish to profit from our sad experience, and to prevent the occurrence of such losses at Hamburg. We, who have had the fire in our midst, only hear our County Council speak of the infallibility of their work. Our authorities try to brave criticisms by empty boasting, and leave any serious research or advance in the matter to private initiative. As for testing the forms of construction common to our City warehouses with the aid of public funds, our "penny wise and pound foolish" policy does not permit of such "extravagances."

But to return to the Hamburg report by the Commission above referred to, a summary would practically read as follows:—

1. Wrought-iron uprights, if unprotected, show little resistance; they collapse in a temperature of over 600 deg. Celsius.

2. The filling-in of wrought-iron uprights with concrete only slightly increases the resistance.

3. The protection of wrought-iron uprights with non-conducting materials very materially increases the resistance.

4. Wooden uprights, if unprotected, catch fire at temperatures under 600 deg. Celsius, but even when well alight, show a greater resistance than unprotected wrought-iron uprights.

5. Neither wooden nor wrought-iron uprights give any sign of an impending collapse.

6. Unprotected cast-iron columns when loaded to the extent of 500 kg. per square centimetre collapse at temperatures varying from 750 deg. to 850 deg. Celsius. Their resistance depends very greatly on the load and section.

7. The protection of cast-iron uprights very materially increases the resistance.

8. In considering the materials and methods of protecting uprights, the faculty of application and question of cost must receive careful attention.

Now the above results may appear very commonplace to the expert, and the eighth resolution almost a matter of course; but if the report be studied, the innumerable kinds of materials tried, and the variety of the tests, all read so instructively that we wonder at the simplicity of the wording of the few facts. These resolutions typically illustrate the methods adopted in Germany. The result of years of research are accorded in a few words, intelligible to the veriest layman; but if the professional man wishes to benefit from it he must examine the resolutions passed in connexion with every step of experiments, and study the whole proceedings. Each set of these minor resolutions goes a long way to explain the qualities and peculiarities of the materials under consideration. We should also remember that only a very small section of the question of fire-resisting material has been under consideration, *i.e.*, the uprights or stanchions. It is to be hoped that Hamburg will be able to extend its work to floors, partitions, &c.

When we now observe how one London "fire-proofing" firm after the other goes to the expense of show-tests, or exhibitions which are to astonish an ignorant public, and the yet more ignorant representatives of our daily Press, we wonder why we have not yet a serious testing-station for fire-resisting materials. The show-tests after important conflagrations convince no one—certainly not the professional man, and much less the experts on whom the firm has to rely to a great extent for his turnover. The sooner the various establishments take a broader view of their trade interest, and perhaps co-operate with the view of seeing if tests cannot be attempted in a more business-like way, the sooner they will have the confidence of the architect and his client. We require some practical tests with special regard to London requirements.

NOTES.

The Lands Transfer Act.

THE Lands Transfer Act, which was passed last session, gave power to the Privy Council to select one county in England in which the registration of title to land should be made compulsory. It appears that the Privy Council have selected the county of London for the new experiment, and the London County Council have asked the opinion of various local bodies on this selection. The Vestry of Kensington have issued a clear and concise statement to the effect that compulsory registration of title should be tried at first in some county other than the so-called county of London. The reasons which they give for this opinion are, it would seem, sound, and it must certainly be admitted that if the effect of the Act is regarded with so much uncertainty that it is only to be put into operation as an experiment, in that case the importance and complexity of the interests in London render it a bad place for such an experiment. Let the Act be tried in a county where at any rate, if it is a failure, it may do as little harm and cause as little expense as possible.

The Engineers' Conference.

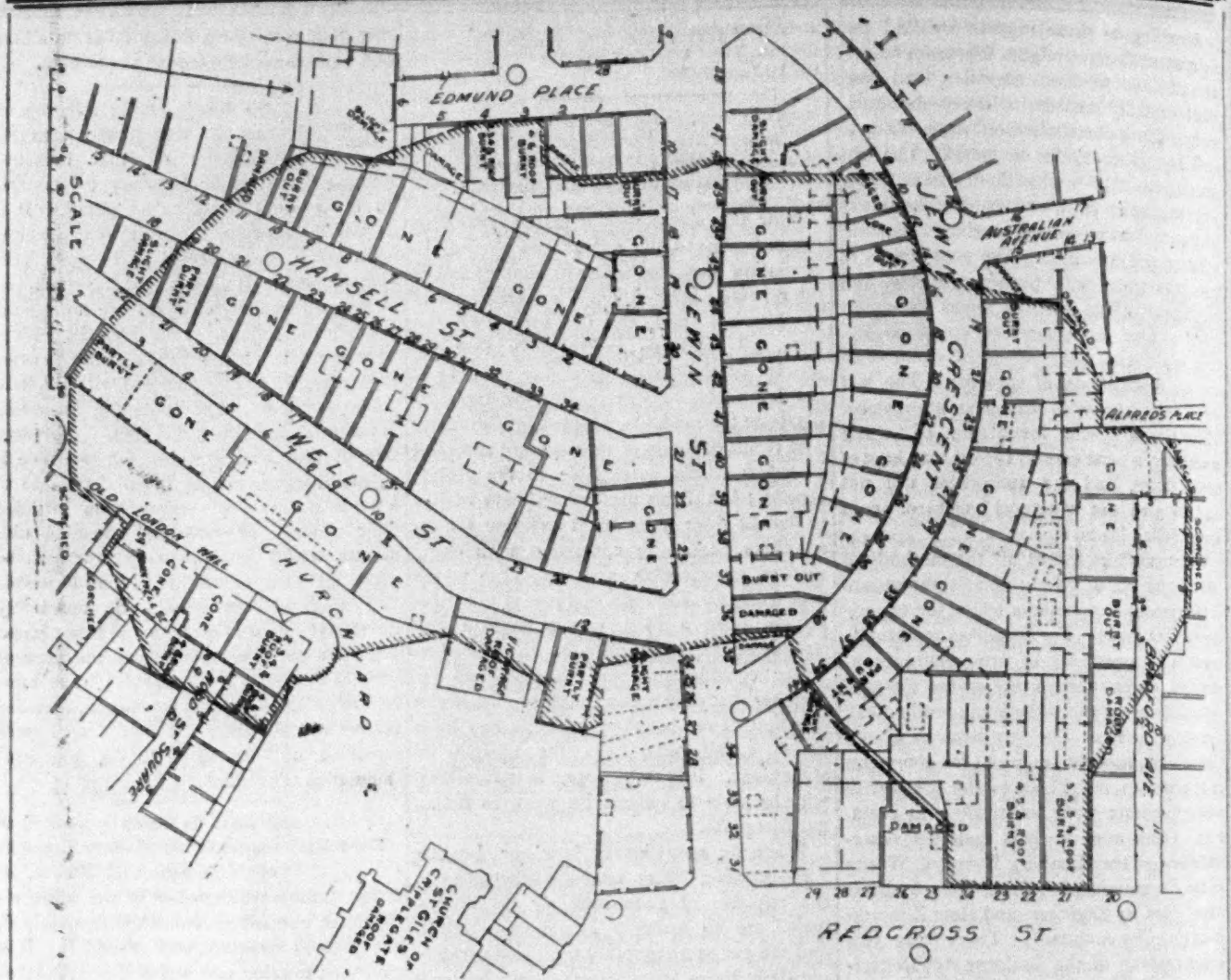
So much public attention is day by day directed to the incidents of this industrial struggle that it is unnecessary to comment on the present deadlock in detail. It is desirable, however, to point to one matter upon which there seems to be some misapprehension. It is said that the conditions formulated by the employers are an attempt to crush the Unions. This does not seem to be their effect. The masters desire to negotiate in regard to engagements with the individual workman; in so doing they are acting in favour of individual freedom. Nor does this prevent trades-unions, where there is a general feeling among the workmen as to a particular rate of wages from pressing their views. The masters' so-called ultimatum would enable every workman to make his own terms. It is not desirable that trades-unions should be constantly interfering between masters and men; when there is a question upon which the general body of workmen in a particular trade have arrived at some general conclusion, then the matter will be discussed by the employers receiving, as they agree to do, a general deputation of workmen.

Kew Bridge.

A BILL is being promoted to empower the County Councils of Middlesex and Surrey, or either of them with consent of the other, to demolish, and sell or utilise the materials of, the present structure, and rebuild it. It is proposed to raise and widen the approaches on both sides of the river, and to erect a temporary bridge, with approaches, a short distance up-stream. The new bridge is to become a county bridge, and will be maintained and repaired accordingly. The first bridge at this spot was built, in terms of an Act of 31 Geo. II., by R. Tunstall, proprietor of the ferry—it had seven wooden arches, and four of stone and brick. In 1782 an Act was passed for replacing Tunstall's with the existing bridge, designed by James Payne (who was the architect also of the bridges at Richmond, Walton, and Chertsey), and opened in September, 1789. It is 400 ft. long, and has seven arches of varying width; the middle arch has a span of 66 ft., and is 22 ft. high; the southern approach is carried over a line of small arches. It is 24 ft. wide, and the gradients are steep, the shores having a low incline. In 1873 a joint Committee of the Corporation of London and the late Metropolitan Board of Works freed it from toll at a cost of 57,300*l*. Further particulars of the bridge's history will be found in our columns of July 13, 1895.

The Paris Salons.

As we have already announced, it had been arranged that the two Paris Salons should hold their next exhibitions side by side in the Galerie des Machines, but each with its own entrance. The next move is that it has been agreed on both sides that, as a provisional experiment and, as the lawyers say, "without prejudice," for 1898 and 1899 the two exhibitions should be accessible by the same entry and at the price of a franc for admission to the whole Gallery. It is to be hoped that this is a first step towards the fusion of the rival Salons, which will be a great deal better for French art than the annual effort to fill two large exhibitions.



Plan of the Site of the Cripplegate Fire.

Site of the Cripplegate Fire.

WE may supplement the particulars already given on this subject by a plan of the ground prepared by Mr. Charles E. Goad, C.E., from his very valuable series of maps of London's principal fire "risks." No illustration could more clearly show where the fault lies. No district covered on these lines with buildings of the most dangerous class could resist any serious outbreak of fire; and yet, as we have said before, after the great St. Mary Axe fire not the slightest improvement was shown in the erection of the buildings which take the place of those destroyed. If the Fire Prevention Committee* already referred to, which has been formed with the view of advocating better planning and construction, and our protection from fire generally, obtains the influence which is hoped, its first work will have to be in regard to the division of "risks," and doing away with common areas or yards in warehouse property, which practically serve as ducts or flues directly a fire has got a hold in a building. Of course the common yard or area has its advantages as far as the lighting of premises goes, but surely their width at least should be restricted, and the protection afforded by shutters made compulsory. Of course, in any movement for fire prevention the practical requirements of business premises have to be considered, and the great value of ground in the most crowded parts of the City. A practical minimum of risk by the adoption of modern methods, materials, and appliances, is all that can be attempted to begin with.

* Offices, 1, Waterloo-place, S.W.

Ostrakon of Themistokles.

THE recently-discovered ostrakon of Themistocles is published in the last number of the *Mittheilungen* of the German Institute at Athens (1897, xxii., 3). It was found, it will be remembered, a little to the north-west of the Areopagos, not far from the modern road and the ancient Panathenaic Way. Two points about the inscription (Θεμιστόκλης φρεάρριος) show that we have to do, not with an ordinary potter's inscription, but with what was undoubtedly a voting potsherd; first, the addition of the deme name; and, second, the fact that the letters have evidently been scratched on after, not before the potsherd was broken off. The ancient voting form was simply name and father's name. From the time of Kleisthenes the deme name was substituted for the father's name. The only point that cannot be cleared up is whether we have to do with the first ostracism in 483 B.C., when Themistocles triumphed over Aristeides, or with the later one when he was defeated. The same number of the *Mittheilungen* contains two valuable papers on early Greek ceramics, one on the survival of "Mycenean" decorative motives in later pottery, the other on a find of archaic vases in Ægina.

Railway Station Architecture.

M. DE BAUDOT, in a lecture at the Trocadero at Paris last week, referred to the elaborate architectural exterior of one of the Paris railway stations as contrasted with the barrenness of its interior, and suggested that this was the inversion of the proper order of things, since every one coming up to a railway station is thinking of being in time, and cannot stop to admire the exterior architecture of the station, whereas he will often have to wait a considerable time inside, and would be glad of something worth looking at. This is no reason, however, for starving the exterior architectural treatment of railway stations; they form an important element in the architecture of a city, and there are other people to look at them besides those going to the trains; but the architectural bareness of the interior is a just cause of complaint, and applies equally to English railway stations, if it were not for the way it is partially but not happily disguised by a motley array of advertisements.

More Arcades for Birmingham.

IT appears that there is a desire to form a new shop arcade system in Birmingham, with entrances from New-street, High-street, and Union-street, the arcade consisting of three covered streets at different angles. There is no greater convenience and comfort in a town, in bad weather, than is afforded by such covered streets of shops, and it is surprising that this way of building shops has not been more largely made use of in large towns in this country, with its wet and uncertain climate. The *Birmingham Weekly Post* gives a sketch of the proposed New-street front of the new arcade, which is evidently intended to be one of the "busy" terra-cotta façades now so popular

in Birmingham. The serious defect of the design is that the large and solid-looking arch forming the entry appears to rest upon and start from nothing but a vacancy below the springing, occupied by the angle door and angle window of shops flanking the entry. In an architectural sense this has the worst possible effect, and it is to be hoped it will not be allowed to be built in this way, or it will be an object of ridicule to architectural critics. It is surely worth while to sacrifice a little plate glass for the sake of getting a monumental façade at the entrance.

The Willesden Surveyor's Report.

THE annual report by Mr. Claude Robson, the Engineer and Surveyor to the Willesden District Council, is, as usual, very full and very well drawn up. Among points to be noted is the increased expenditure on highways, partly owing to the traffic to and from buildings in progress, on a loose clay soil, partly to the demands of the cyclist, "for whose benefit a steam roller is demanded for every stone that may be loosened from the surface, and what was formerly accepted as reasonable repair for carriage traffic is now utterly unfit for the pneumatic tyre of the cycle." A large number of additional trees have been planted in various thoroughfares under powers conferred upon the Council by Section 43 of the Public Health Acts Amendment Act, 1890; but it is remarked that unless discretion be used in the choice of streets for this work, trouble will be encountered in the future as the trees mature. Already the paving and adjoining forecourt walls are showing signs of disturbance by the roots of some of the older trees, and that there is possibility of considerable damage occurring in future years where trees are planted in narrow streets with the houses closely abutting upon the pathway. Endeavours have been made, by the construction of weirs with sluices, to improve the condition of the River Brent by ensuring a flow of the generally stagnant stream, and it is urged that if the authorities in the lower part of the river were to organise a similar system of weirs and sluices, and the river could thus be treated for its entire length, the Surveyor is confident that improvement would ensue.

Decorations for Wakefield Council House.

LAST week Mr. H. C. Fehr, the sculptor, exhibited at his studio some interesting coloured plastic decoration that he has recently executed for the County Council buildings at Wakefield. It consists of a frieze some four or five feet deep, and illustrates scenes in the Wars of the Roses, in which Wakefield took so prominent a place. The subjects represented are:—1. "The Battle of Wakefield;" 2. "The Procession of Henry VII. and Elizabeth of York through the Town;" 3. "Bosworth Field, the Crowning Scene;" 4. "Marguerite of Anjou delivering her Son to the Robbers in the Woods." Mr. Fehr has shown in this work how well mediæval pageantry lends itself to decorative effect; the battle scene is full of movement and vigorous modelling, the colouring throughout is effective; in the foreground rich trappings, the gleam of armour of men and horses, in the middle distance the subdued colouring of foot soldiers with their pikes, then far away glimpses of landscape in colder colouring. This is a kind of interior decoration which, no doubt, if popularised and carried out by inferior hands, may easily degenerate into tawdriness; it requires the hand of an artist.

Mr. Wake Cook's Drawings.

AT the Fine Art Society's Gallery is a collection with the rather fanciful and pretentious title, "Water-colour Drawings on the Quest of Beauty in the Sunny South and in Utopia," by Mr. E. Wake Cook, which, in spite of the title, are of rare beauty and delicacy. The latter quality is perhaps a little overdone; the drawings are marked by minute finish and prettiness rather than by power and breadth of effect; but within their own lines they merit the highest praise. Some of the smaller ones among the Italian scenes remind one rather (perhaps intentionally) of the kind of work in Turner's "Vignettes" for book illustrations. Those of the larger ones in which architecture is illustrated are admirable in regard both to care in drawing and delicacy and truth of colour; to be noted especially is "The Gates of the Loggetta, Venice" (16), in which the architectural detail is beautifully made out, and the "patina" on the metal work; and the figures are as complete and finished as the architecture, which is seldom the case in architectural water-colours. However, Mr. Cook is an accomplished figure draughtsman also, as is evident in his charming composition of Endymion (32). As to the Utopia scenes, they seem to aim at a little more than they effect; there is one of "The Home of the Gods" (17), which we care not much for; one of the Garden of Eden—"Nature's Paradise" (43), the composition of which is a good deal suggested by Turner's "Golden Bough," and a companion or pendant to the last named under the title "The Paradise of Art" (54), a dream of imagined architectural glories, which is effective as a whole, but the detail of the Utopian Gothic does not attract us very much. The imaginary cities in "Marianne's Dream" (44), illustrating some lines from Shelley, form the most successful of these ideal subjects. But we sympathise very much with the author's plea for idealism in art in his short preface; "with science treading on our heels, artists must go where the camera cannot follow them."

Views in Wolmer Forest.

A COLLECTION of oil and water-colour views in Wolmer Forest, by Mr. J. H. Vignoles Fisher, is on view at Messrs. Dowdeswell's Galleries in Bond-street. The oil-paintings are a good deal occupied with forest scenes in which straight fir stems, not too close together, make vertical pillars crossing the picture; there is a little sameness about these, and the method of execution strikes one as rather hard and dry. But the water-colour drawings, which are the more numerous, are admirable examples of the best school of water-colour sketching. Among the best are "A Coming Shower" (14), with a grand sky; "Heathland" (24); "A Forest Pool" (29); "A Heath Road" (44); "On Passfield Common" (51); and best of all the one entitled "Moorland and Sky" (32), in which the artist has reproduced the effect of masses of rounded white clouds, in strong light, seen over the edges of a dark undulating stretch of heath, with almost startling vividness and reality; it is a little work which "Old Crome" might have been glad to own.

Nature's Decorative Art.

AT Mr. Dunthorne's small gallery in Vigo-street is an exhibition such as it is unusual to find in an art gallery, but which yet has a very close relation with one form of art. This is a collection of more than thirteen hundred butterflies and moths, exhibited by Mr. Denton's new method, by which, instead of being stuck on pins, the creatures are spread out on a white tablet with glass over it pressing the wings flat, while a sinking in the middle of the tablet leaves room for the body of the insect. The method will be of interest to butterfly and moth collectors, but the real interest of the exhibition is in the endless variety of beautiful colouring and design which is shown in the wings of these creatures, and which can only be fully realised by the study of such a number of them together. The announcement of the exhibition struck us as an odd one to come from the proprietor of an art-gallery; but after seeing the collection we could only come to the conclusion that it was quite in place there, and that it is one which every decorative artist ought to take the opportunity of seeing.

"Société Internationale de Peinture."

THE "Société Internationale de Peinture et Sculpture" has opened its fifteenth annual exhibition at the Georges Petit Gallery in Paris. Among the best works there are the portraits by MM. Alexander, Callot, Rondel, and Carrier-Belleuse. Landscapes form a large proportion of the exhibition, among the best of which are "Le Vieux Port" by M. Baertsoen; "Sous les Saules" by M. Boucher; "Landscape in Picardy" by Mr. Brangwyn; Studies on Breton sites by M. Albert Dagnaux; "Le dernier Sillon" by M. Albert Fourié; and some charming scenes on the banks of the Seine by M. Fritz Thaulow. Among the sculptors exhibiting, M. Vernhes deserves special mention for his statuettes in wax, as well as for a marble bust of "Une Bretonne." Generally speaking, the exhibition forms a very good collection of examples of the work of some of the younger French artists of the day.

The R.I.B.A. Dinner.

THE Festival Dinner of the Royal Institute of British Architects, of which a report, with the names of those present, will be found in another column, was a success so far as numbers, good fare, good singing, and the presence of a good many eminent guests, could render it so; though we are of opinion that it would have been a far greater success had it been he d at the earlier period first proposed. Of the speeches it may be said that those which had most matter in them were least effective in delivery, and those which occasioned the most entertainment were rather threadbare in ideas, if we except Dr. Collins's, in which matter and delivery were best balanced. It is not generally supposed, of course, that one is to talk philosophy in an after-dinner speech, but at a dinner of artists it may be allowed that one or two speeches should be devoted to the intellectual side of the subject; and in this respect the President's utterances on the occasion will be found not without interest from a critical point of view; this we suppose is the reason that no report whatever of them is given in the *Times*, which reports all the other speeches more or less. There is one question, however, to be asked—who over-

looked the proof of the menu-card? This document contained the statement that the dinner celebrated the sixtieth anniversary of her Majesty's "Accension," that the grace was "Deum Laudatie," that one toast was proposed by "Mr. Ashton Webb," and that the final toast was "Architecture and the Allied Trades." It would be interesting to know from whom this last bit of satire emanated; but it is not creditable that a card so full of absurd blunders should have been put in the hands of members and guests. We may add that we think the Art Committee of the Institute might have been called in to consider the devising of a special artistic menu-card for the occasion; which would almost certainly have been done at a similar dinner among French or German architects.

THE ARCHITECTURAL ASSOCIATION:

THE PLANNING OF HIGH SCHOOLS FOR GIRLS AND ENDOWED SCHOOLS.

THE ordinary fortnightly meeting of this Association was held in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, on Friday last week, Mr. Hampden W. Pratt, President, in the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected members:—Messrs. C. J. Barker, A. St. John Diamant, A. G. Ross, J. Henry, and W. H. Williams. Mr. A. G. Angel was reinstated.

On the motion of the Senior Hon. Sec., Mr. E. Howley Sim, a vote of thanks was accorded to Messrs. G. B. Carvill, F. D. Clapham, Leonard Butler, and cast for the entertainment given on the 26th ult. in connexion with the conversazione of the Association, and to Messrs. R. Phené Spiers, Alfred H. Hart, W. H. Atkin Berry, W. G. B. Lewis, A. C. Dikie, for the use of drawings and photographs exhibited on the occasion. The name of Mr. Cox was also included in the vote of thanks for the design on the cover of the programme.

The Chairman said they were all very much indebted to the gentlemen who had taken part in the entertainment for the amount of time and trouble which they had given on the occasion.

The Chairman announced that the Lyric Club concert would be held in the Club-rooms, Swallow-street, on the 10th instant. He also announced that a General History Class would commence on the 23rd instant.

Mr. Sim announced some donations to the library, and a vote of thanks was passed to the donors.

Mr. J. Osborne Smith then read the following paper on "The Planning of High Schools for Girls":—

During the past twenty-five years a goodly number of these schools have been established, and for a lesser number special buildings have been erected.

The requirements have naturally grown, and experience has, as usual, taught many valuable lessons to all concerned.

High schools, I may remind you, are superior day schools for girls of all classes above those provided for by the Elementary Education Act. There were no high schools twenty-five years ago: the word "high" was not used as applied to schools until the incorporation of the Girls' Public Day School Company, Limited, in June, 1872. The starting of this company to establish and maintain in London and the Provinces superior day schools forms an epoch in the education of the larger half of the inhabitants of England. It was an attempt to meet and correct the defects pointed out in the report of the Schools' Inquiry Commission:—"Want of thoroughness and foundation; want of system; slovenliness and showy superficiality; inattention to rudiments; undue time given to accomplishments—and these not taught intelligently or in any scientific manner; want of organisation."

The first school was opened in January, 1873, at Chelsea, in an old house adapted for the purpose. There are now thirty-four schools belonging to this company, and various others have been established by limited liability companies, which were formed usually to establish individual schools.

Existing buildings, more or less adapted for the purpose, formed the first homes of many flourishing schools now housed in buildings, the planning of which is based upon the knowledge thus gained. Work carried on in buildings originally erected as private residences, or for other purposes, revealed almost hourly weak places where time was lost, where adequate supervision was impossible, and where it was hopeless to combat the evils attendant upon temporary and ineffective means of ventilation, low and small rooms, narrow staircases, weak floors, falling ceilings, small and dark cloak-rooms, small fireplaces, insufficient light, and other defects.

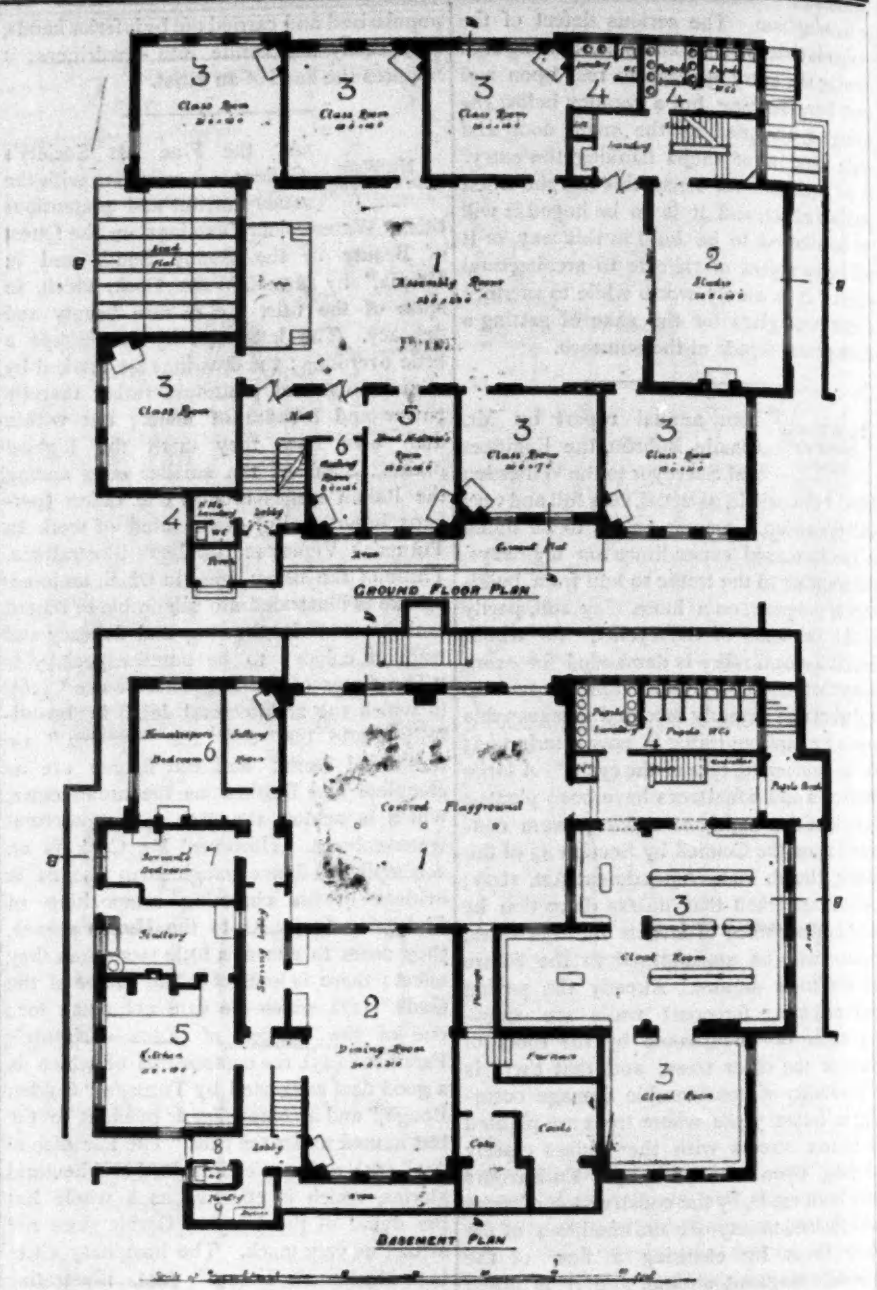
These drawbacks to effective teaching were well remembered, discussed, and digested whenever a new home was in view, and the new school-house, planned and erected for a definite purpose, became at once an added pleasure to the daily lives of both mistresses and pupils, and an effective aid to education.

It is difficult to find existing buildings suitable for high schools, or that can be made efficient without great expenditure; this sometimes leads to two or more houses (not necessarily adjoining) being occupied by one school—a most trying arrangement for the teaching staff.

To follow in detail the growth and development of these schools in the adapted buildings would make an interesting paper by itself. I propose to dwell this evening upon the types of plans which experience has proved to be best suited for the work which is carried on in high schools.

One of the most prominent characteristics of a high school should be cheerfulness produced by ample lighting, plenty of sky visible, possibility of the sun himself being able to peep into every room, pleasing wall surfaces, good pictures, &c.; all these, except, perhaps, the last, form a part of the design, and if the architect will make tempting provision for hanging pictures in suitable positions, the pictures will soon follow. Gloom, semi-darkness, and all the opposites to bright airiness should find no place where children are being taught.

Spaciousness, too, is an important quality to secure; ample floor space is here meant—not loftiness. Class-rooms need not be lofty to be healthy; an excessive cubic space above the pupils' heads makes ventilation and warming more difficult, and is simply enclosed space in the wrong place. It is obvious, also, that inasmuch as it is found desirable to limit the number of children in a class to thirty or forty, the floor space must be limited to dimensions which will enable the mistress to keep the

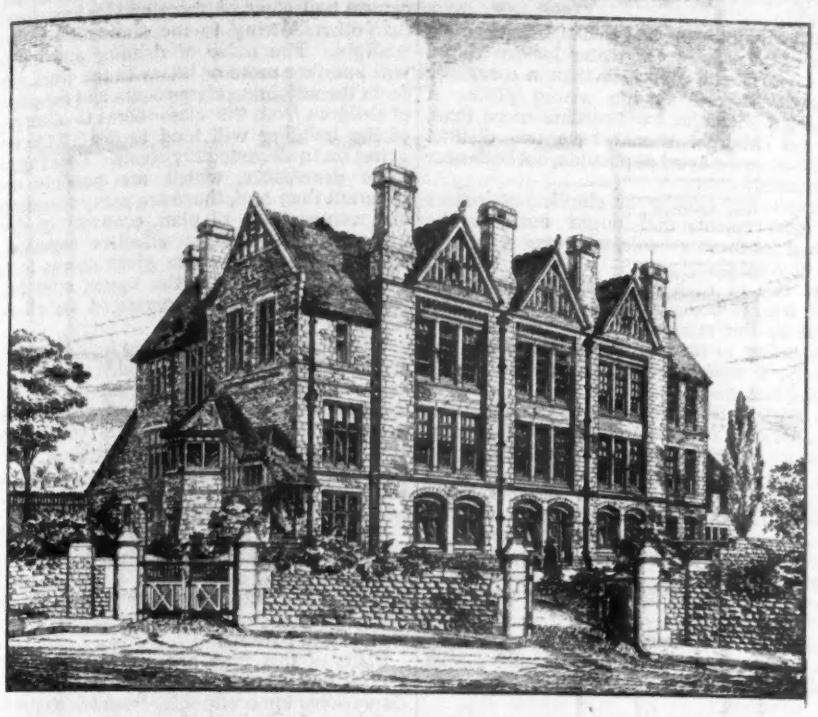


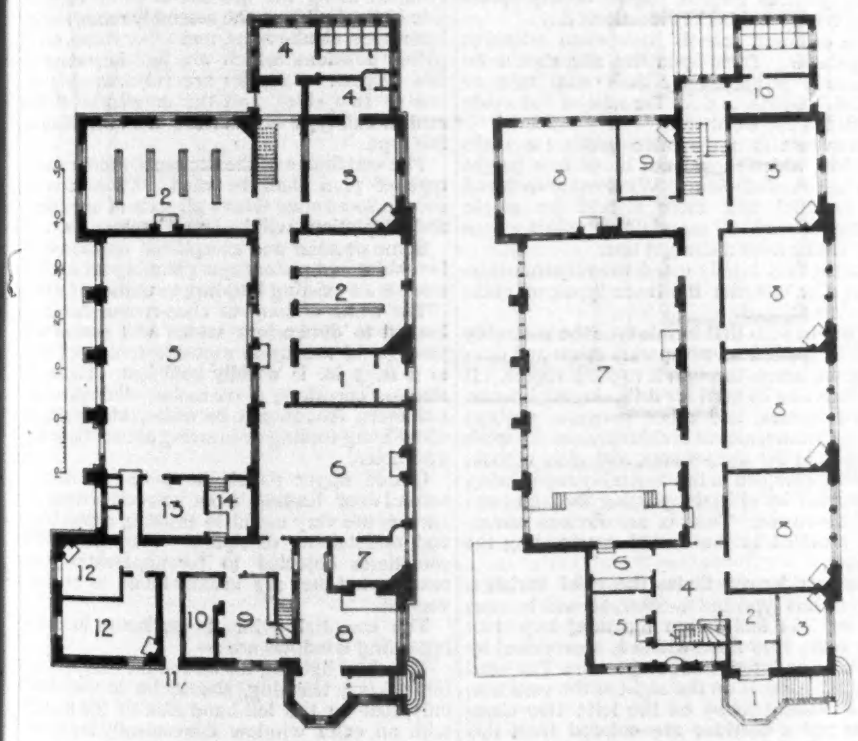
Wimbledon High School: Basement and Ground Plans.

REFERENCES.

Ground Floor Plan.
1. Assembly Room.
2. Studio.
3. Class-rooms.
4. Lavatories and water-closets.
5. Headmistresses' Room.
6. Waiting Room.

Basement Plan.
1. Covered Playground.
2. Dining-room.
3. Cloak-room.
4. Lavatories & water-closets.
5. Kitchen and Scullery.
6. Housekeeper's Rooms.
7. Servants' Bedroom.
8. Servants' water-closet.
9. Pantry.





Ground Floor Plan. First Floor Plan.

Sheffield High School for Girls.

REFERENCES

Ground Floor Plan.

1. Pupils' Entrance.
2. Cloak-rooms.
3. Teachers' Room.
4. Lavatories.
5. Covered Playground.
6. Dining-room.
7. Serving-room.
8. Kitchen.
9. Scullery.
10. Larder.
11. Tradesman's Entrance
12. Bedrooms.
13. Coals.
14. Heating Chamber.

First Floor Plan.

1. Porch.
2. Vestibule.
3. Waiting Room.
4. Hall.
5. Headmistress's Room.
6. Ante-room.
7. Assembly Room.
8. Class-rooms.
9. Music Room.
10. Lavatories.

pupils well under control, to speak to them all effectively without strain and have access to each desk without disturbing the pupils at adjoining desks. These considerations, as well as those of access to the room, space for and around the mistress s desk for teaching apparatus, &c., must be regarded as determining the extent of floor space, even when it is not urgently necessary to keep always in mind the cost of every cubic foot of space you may wish to enclose.

When the room is warmed by the usual open fireplace, the best position for that cheerful, if wasteful, contrivance must not be overlooked, because it also demands a portion of the available floor space.

The relative positions of the door and fireplace in relation to the windows deserve more consideration than is usually given. Waste of space necessarily arises where both door and fireplace are not situated at the end of the class-room occupied by the teacher. It is not convenient for the fireplace to be in the centre of the end wall; sometimes it may be well placed near the door. The corner of the room on the right hand of the teacher is a position with many advantages.

The fireplace should contain some form of ventilating or warm air producing grate, with fresh air brought to it from outside well above the ground, all inlets being short and accessible for cleaning; the air chamber for warming the incoming air ought also, for cleanliness' sake, to be readily accessible. In large rooms, or where there are two or more external walls, it is sometimes found desirable to supplement the fire by hot-water pipes under the windows or along the wall opposite to the mistress. Open fireplaces should not be omitted from schools of this kind without very full and serious consideration of the means to be employed to warm and ventilate the buildings, and especially the class-rooms.

This slide [exhibited] shows a form of class-room for thirty pupils, which from its frequent use may be accepted as convenient both in shape and size. The dimensions given are not extravagant, but they are found sufficient when adequate means for ventilation are provided, *and used*. The allowance of floor space per pupil is 13 ft. 6 in. super (or 13·65 ft., to be quite accurate), and the cubic space 163·8 cubic feet per child.

Space should be provided between the walls and desks for access for supervision, and to enable the children and mistress to write or draw upon the slates or blackboards upon the walls. Movable blackboards are inconvenient appliances, but as they are less costly than continuous slates the inconvenience still prevails in too many instances. It is possible still to find class-rooms with windows, blackboards, and desks so arranged that it is impossible for all the scholars to read what has been written or drawn for their instruction.

The ceilings should be as much as possible unobstructed by beams or other timbers which prevent the ready flow of air or check or divert the air currents.

A point which affects the health and comfort of teachers is the provision of windows at the back of the children. If these windows happen to be in a south wall, the evil becomes very trying. A teacher told me a few months ago that one of his eyes was seriously injured from having to face a south window; moreover, under such conditions some of the pupils' features are in shade, and it is not possible to distinguish the effect of the teacher's remarks upon the children, which is so very desirable, and adds to the interest and pleasure of teaching. Except in cases of special difficulty, it is possible to effectively light any class-room, large or small, from windows *in one wall only*. An additional window may be useful for obtaining direct sunlight in an otherwise sunless room, or for securing cross ventilation not otherwise obtainable, or for other sufficient reasons, but it will in any case be found desirable to make that window smaller than the rest, or to place it in a corner of the room, or to arrange means of regulating the light from it when required.

The chief use of the assembly room or central hall is to accommodate all the pupils at one time daily, and its size is fixed accordingly. If the school is thought likely soon to expand beyond a nominal standard this room may be built to accommodate a maximum number of possible pupils; in other cases, where a smaller number of pupils are provided for, with no reasonable prospect of extension, the assembly-room may be of lesser dimensions. As will be noted further on, this hall may serve for access to the class-rooms upon two floors, a consideration by which its height is often determined. Naturally, the supplementary purposes for which it is used also affect the floor space, shape, and dimensions.

This important room should be near the principal entrance, and have ample means for access; it was a common defect in the earlier schools that only one entrance was arranged. This should be regarded as inadmissible, except in very small schools.

The position of this room in relation to the class-rooms is probably the most important factor in determining the general plan of a school.

Side-lighting for this hall is preferable for the sake of ventilation. Where top-lighting is used, great care and judgment are required to avoid too much glass, which, moreover, should be placed as near the sides as possible, in order to prevent deep shadows being cast upon the floor from the balconies. Centre top-lights are rarely successful for school-rooms of any kind.

Good acoustic conditions ought to be secured for this room.

For convenience of consideration, plans may be divided into three types, viz. :—

1. Those which have the principal class-rooms and the assembly-room separated by corridors.

2. Those where the class-rooms are grouped round a central hall.

3. Those which have class-rooms on one, two, or three sides of the assembly-room, leaving the fourth side an external wall.

The difficulties of a contracted or otherwise comparatively unsuitable site—while increasing the architect's interest and enjoyment of his work—often lead to varieties of treatment not included in either of these types. These may be regarded, however, as exceptional plans adapted to special situations rather than typical examples.

Sometimes a feeder is fostered in the form of a kindergarten room, which should be exceptionally cheerful, on the sunny side of the ground floor, near to the pupils' entrance, and to separate lavatories.

The Requirements.

A spacious room for drawing purposes facing north or east, with as much floor space as can be afforded, and wide doorway, fitted with cupboards, rails and shelves for models, racks for boards, drawers for paper drawings and materials, a sink, dark blinds, &c., well lighted from one side or end. Usually the best situation for this room is upon the top floor.

Laboratories for teaching chemistry and physics (separate rooms for each if possible), with impervious floors, ample side or top lighting, and special means for ventilation, fitted with working tables, with water, gas, and electricity laid on. Also a small room for balances, cupboards for stores, apparatus, &c.

The size of the laboratory must depend upon the extent to which science is taught in the school. It should be lofty, well lighted, with the windows just above table height and extending to the ceiling ; ventilation must be specially studied, particularly the means of readily producing cross currents of air at the levels of the work tables and ceiling. It is convenient sometimes to plan a separate building for science teaching.

A covered playground fitted as a gymnasium.

A luncheon-room for mistresses and pupils, with the kitchen, and offices, and housekeeper's rooms adjoining.

These domestic rooms should be planned with a separate entrance, and be cut off from the school rooms with prompt access from the kitchen to all the school entrances, and from the school to the dining-room. On no account should any of the noise or odours from the domestic rooms be allowed to enter the school proper.

Well-lighted and ventilated cloak-rooms, not less than 9 ft. high, and large enough to afford floor space for fittings.

The best position for cloak-rooms is, of course, near the pupils' entrance ; stands for cloaks should be about 6 ft. apart from centre to centre, and about one lineal foot of stand space should be allowed for each pupil, with means for drying wet clothes.

A sitting-room for assistant mistresses should overlook the playground and its entrances, and be reasonably near to the head mistress's room. A small cloak-room and lavatory are convenient and desirable adjuncts. It should not be less in size than an average class-room. The glass line of the windows should be nearer the floor than in the class-rooms ; in this, as in other respects, the room should be regarded as a work-room and sitting-room combined.

The head mistress' room with secretary's room and a small waiting-room must be near the chief entrance, and the platform end of the assembly-room. Neither of them need be so large as a class-room, but from the windows of the head mistress's room it should be possible to see the main entrances to the building. This room is a work-room and also a reception-room : it should be well lighted, cheerful, and convenient, with a lavatory near at hand.

Stairs should be of reasonably fire-resisting materials which will not become slippery, have easy gradients, wide treads, and shallow risers, suitable for the younger children, thoroughly well lighted, and at least 4 ft. wide, to enable two files of pupils to pass each other. Those to cloak-rooms, or where there is an exceptional amount of traffic, should have hand-rails on *both* sides to prevent accidents, and be, say, 5 ft. wide.

The position, form, and size of the staircases are most important ; no greater inconvenience in a school can be conceived than a carelessly designed staircase in the wrong place. A building designed to accommodate more than, say, 150 children, should have two distinct staircases, as far apart as possible, but both near the assembly-room.

Winders and circular or elliptical staircases are inconvenient, and ought never to be planned for these schools, wherever it is possible to avoid doing so.

The rise of each step should not exceed 6½ in., 6 in. is better when obtainable ; 11 in. should be the minimum width of the tread (from nosing to nosing). Staircases need not be lofty, if sufficient head room and ample lighting be secured.

Lavatories with wash-basins to accommodate, say, 5 per cent. of the pupils at one time, and closets for, say, 3 per cent., can be in most cases conveniently arranged on two or more floors in a separate wing or other suitable position, disconnected from the main building by a staircase or well-ventilated corridors.

A bicycle store or shed has now become an essential requirement, as girls now ride to school in great numbers. It has been said that "one want creates another," and covered stores for cycles, now they have apparently come to stay, must be considered, and placed as near to the pupils' entrance as may be safe and convenient.

Last, but not least, a spacious levelled playground for tennis and other games, small border gardens for the pupils' botany specimens, cricket and hockey meadow, &c.

The endowed schools have often extensive playgrounds. Trees upon the site should be judiciously preserved for their own sake as beautiful objects, and for the sake of the shade afforded in hot weather.

Seven feet is a desirable width for main corridors, which should not be of less height than therooms adjoining. Windows at each end are essential, and there should be ample lighting throughout, especially at points where they deviate from a straight line.

Having thus briefly noted the requirements, let us now consider the three types of plans before mentioned.

It will be seen that in this type the assembly room is treated as a separate room and does not afford access through it to other rooms. It can therefore be used for drill, singing lessons, special classes, and other purposes without causing inconvenience and hindrance to work going on in the class-rooms, and also without the work going on in the assembly room being interrupted by children passing through from the class-rooms. That is an obvious advantage provided at the cost of constructing the corridor.

The corridor constitutes the chief variation between this type and another, as will be seen later on. In this design the most important story is the first floor, which is approached by covered stone steps (see perspective). The head mistress's room is on the right of the vestibule, and a waiting lobby on the left ; two class-rooms and a corridor are entered from this lobby ; other class-rooms are on the right, and two at the left in a line with the assembly-room.

Two well-lighted staircases, one at each end of the corridor, lead from the ground floor to the second floor, and there are large borrowed lights between the assembly-room and corridor, and over each class-room door.

On the second floor are class-rooms over those below, a small laboratory over the head mistress's room and vestibule ; one of these class-rooms is fitted as a science lecture-room, and a large studio at end of assembly-room.

On the ground floor are the pupils' entrance, with cloak-rooms on the right and dining-room on the left, a gymnasium under part of the assembly-room, mistress's room, lavatories, tradesmen's entrance, kitchen, and offices, two rooms for special work, furnace chamber, fuel store, serving room, &c. There is access to the playground at three points. Most of the class-rooms are lighted from the south-east, the assembly-room faces north-west, and the studio north-east. This school accommodates 320 pupils, and is found, after being in use for twelve years, to be convenient and suitable for the purpose. The playgrounds attached to the school are exceptionally extensive for a High School. Classes are held there under the trees in summer.

Where the rooms are grouped round a central hall some of them will be less cheerful than others, owing to the diminution of direct sunlight. The noise of drilling and singing will interfere more or less with the work going on in the adjoining class-rooms, and the passing of children from the class-rooms to other parts of the building will tend to disturb the work going on in the assembly-room. To set against these drawbacks, which are possibly more apparent than real, there are many advantages, viz., compactness of plan, economy of space, increased facilities for effective supervision, &c. The assembly-room gives access to two stories of class-rooms, the upper ones being entered from a gallery arranged on all four sides.

This form of hall is easier to light than would appear at first sight. In fact, one has to be very careful indeed to avoid having too much lighting surface, which, it must never be forgotten, is also chilling surface in cold weather and heating surface in summer time. It is a common and fatal error to underestimate the value of a square foot of top-light—fatal to comfort, convenience, and health.

The assembly room is occasionally used also for prize distributions, lectures, concerts, private theatricals, and similar functions, and by this plan the adjoining rooms and galleries can be used to increase the accommodation for visitors and parents.

Plans of this type are a variation upon the central hall type, inasmuch as there are no class-rooms upon one side, from which the hall is lighted through windows in the only external wall. In this form of plan the class-rooms are grouped along the quietest or most cheerful side of the building, the assembly room, studio, laboratory, cloak-rooms, and other rooms occupying positions which are less important in this respect. Galleries are required only on one or two sides, and the drawbacks of the central hall type of plan are somewhat less in this type.

The conditions of the site usually settle which type of plan shall be used. There are, of course, some sites where all sorts of variations and adaptations will be found necessary.

Some peculiar and exceptional opportunities for skilful and picturesque planning arise when one has an existing building to utilise and fit in.

The width of doors to class-rooms should be limited to dimensions which will permit the passage of the usual movable furniture ; 3 ft. to 3 ft. 3 in. is usually sufficient. Those to studios, corridors, cloak-rooms, dining-rooms, entrances, &c., should be wider, with pairs of doors hung folding or to swing as may be found desirable.

Glazed upper panels in doors and also a second door leading from one class-room to another are very useful in assisting supervision and maintaining discipline. Glass panels are sometimes objected to for apparently good reasons, but they are usually found to be convenient.

The essential points to be borne in mind regarding windows are :—

The chief lighting for *all* rooms, except those for science teaching, should be in one wall only, that on the left-hand side of the pupils, with an extra window conveniently arranged where possible for cross ventilation or extra sunlight.

The glass line should be as near the ceiling as possible, and not nearer the floor than 3 ft. 6 in. or 4 ft. in class-rooms, and the glass should be clear, except in lavatories and a few other positions.

The window frames should be as near the outer surface of the wall as appearance, Building Acts, and other circumstances will permit, to afford means for obtaining admission of air without interfering with blinds, &c., and also to allow the maximum of floor space to be used without the desks being placed too close to the glass.

All windows should be made so as to be opened easily by children, and to the fullest extent possible, and should be constructed to permit portions of them to remain open if desired while work is going on, without the possibility of downward currents of air being felt by the pupils.

The most suitable kinds of windows are those which can be opened most readily, and which when open will not admit rain or expose the occupants of the room to strong currents of air.

French casements and centre-hung sashes, although very useful in some positions, are *not* as a rule desirable for class-rooms. Double-

hung sashes, with hopper casements over them hung to the transome are a common and useful form of window. Hopper casements hung to sill and to transome, with centre or side-hung sashes between them, are found convenient, and comply with the conditions above referred to.

In the wall opposite to the windows, openings near the ceiling, fitted with hopper casements, are extremely useful in obtaining cross ventilation of the rooms during the intervals for recreation and when the school is closed.

Fireplaces are conveniently arranged in the wall facing the children, not in the centre, if it is possible to place it either near the door or in the corner near the windows, especially when warm air grates or stoves are used, as then the cold air inlets are short and accessible; it is very important that all stoves or grates used for warming the air should be capable of being taken to pieces to allow the air channels to be kept clean.

Cloak-room Fittings.

Stands from 5 ft. to 6 ft. from centre to centre; seats and boot-racks, with hot-water pipes below them, are usually provided. Where this is not possible, other means for occasional drying of damp clothes are desirable.

Cement, asphalt, tiles, wood blocks, or similar materials capable of being readily cleaned are most suitable for the floors; cement or varnished wood for dados.

Lavatory Fittings.

The water should be laid on to the basins and water-closets direct from the high-pressure mains, or from cisterns placed at a considerable height above the lavatories.

The diameter of the pipes will depend, of course, upon the size of the lavatory ranges or the number of closets to be served, as well as their position below the main cistern. A very important point to bear in mind is that the closets and lavatory basins are often all in use during the same time, therefore all service pipes must be exceptionally large. There are so many disadvantages connected with the small flushing cisterns which water companies insist upon, that other methods of flushing the closets are arranged when water is supplied through a meter, such as lead-lined trough and spindle valves over water-closets or continuous cistern. The stoneware trough and automatic flushing-tank arrangement for water-closets partially avoids these difficulties; but a separate water-closet apparatus and flushing arrangement has many advantages over the trough method. Ranges of water-closets in or adjoining a building should be invariably separated from the corridor or stairs which gives access to them by a well-ventilated lobby or passage, in which may be placed the lavatory basins. These lavatories should be roomy enough to allow pupils to pass freely to and from the water-closets while others are using the basins.

The height of the lavatories and water-closets need not exceed 8 ft. 6 in. or 9 ft.; a separate window for each water-closet, inlet ventilators near the floor of the lobbies or lavatories, and outlet flues from the ceiling level up to above the roof are desirable.

Walls.

Walls must, of course, be built of sufficient substance to resist heat, cold, and moisture. Hollow walls in very exposed situations are useful, in spite of their disadvantages; but solid walls of good materials are better for ordinary positions. All openings in walls, flues, chaces, &c., should be made accessible for cleaning.

The greatest care should be taken, and thoroughly effective means should be adopted to prevent moisture penetrating the walls from above downwards, or from the ground upwards. Solid damp-proof courses, formed of asphalt, slate, cement, &c., ought alone to be used, being much more effective than the various glazed perforated substitutes.

Roofs.

Roofs, if of the usual wood rafters, and slate, tile, or lead coverings, should be close boarded, and have some non-conducting material under the outer coverings.

Floors.

Floors of class-rooms should, if possible, be impermeable, and covered with wood. Where wood joists are used special care should be taken to ensure rigidity, and provide effective means of checking the passage of sound and air through the floors.

Floors of all lavatories and science-rooms should be solid, with hard, non-absorbent coverings. The use of porous breeze concrete for such floors is not to be commended. Wood floor coverings should be polished, and have skirting fillets of sufficient width to keep the desks from injuring the wall surfaces.

Ventilation and Warming.

The cost of forming and maintaining a system of mechanical ventilation, and the desire for an open fire for the sake ot cheerfulness and prompt control, account for the fact that in most of the schools of the kind under consideration the open fireplace has been utilised.

If a school building be designed to allow currents of air to sweep entirely across it during the pupils' absence, and each class-room be provided with two 9 in. by 9 in. or 14 in. by 9 in. shafts or flues from the floor to above the roof, with inlets to each at floor and ceiling levels, in addition to a large warm-air grate and suitable windows, it is found in practice that reasonably adequate means for warming and ventilating are thus economically obtained.

Their effective use depends greatly, of course, upon the mistresses in charge of the rooms, but it is an exception to find a head-mistress who is not keenly alive to the value of the means afforded and familiar with the use of them.

Vertical inlet tubes, deep sill fillets to windows and the various valve ventilators, are all useful as aids, *when kept clean*; but unless air is warmed before it enters a school, the inlets will remain closed during six months of the year when fires are in use. This fact accounts for the popularity of the various ventilating grates, most of which can be taken to pieces periodically for cleaning, and work best when doors, windows, and ventilators are closed.

The assembly-room, corridors, cloak-rooms, lavatories, laboratory, entrance lobbies, and staircases can be more conveniently warmed by hot-water pipes. It should be possible to raise the temperature in the corridors, cloak-rooms, lavatories, &c., to about 50 deg. or 55 deg. during cold weather, for the purpose of preserving a fairly equable temperature inside the building and protecting the sanitary arrangements and water services from disorganisation by frost.

The small pipe medium pressure apparatus is found very useful for warming schools, on account of the small quantity of liquid used, enabling heat to be produced in less time than with larger pipes. These small pipes, moreover, can be used under skylights and in other positions where the larger pipes could not conveniently be placed.

The practice of arranging hot-water pipes in channels below the floor of the spaces to be warmed, with open gratings above them, is unnecessary, wasteful, and dangerous, because of the difficulty of keeping the pipes and channels free from foul matter from boots and floors. Enclosing hot-water coils in ornamental casings is objectionable for the same reason.

The last word upon warming and ventilating crowded rooms has not yet been said; the present methods are not perfect. The air in streets is polluted in a manner which it is to be hoped will be regarded with amazement in the near future, when thick clouds of unconsumed fuel, foul exhalations from so-called sewer ventilators at the level of the roadway, and the fibrous filth from wood pavements, are no longer allowed to adulterate the precious air, which ought to enter our houses unsullied by such dangerous and unpleasant companions. At present the windows and doors are often closed, and the air refused admittance, *because it cannot enter alone*. Air in buildings will always require warming in winter, but it need not require washing and filtering as it does now.

The problems met with in endowed schools for girls are very similar to those in high schools, and are solved in much the same way. Endowed school governors are too often not overburdened with funds, the endowments having been usually severely taxed to provide new buildings for the education of the boys before it was thought desirable to make similar provision for girls.

In conclusion, I venture to hope that the movement for giving increasing facilities for secondary education to girls will continue, and that those of us who form part of the lesser half of the population will assist with all our energies in this desirable work, even if it should lead to provision being made for training and encouraging women to study architecture in the coming new home of this Association.

Mr. Banister F. Fletcher, in proposing a vote of thanks to the lecturer, said the paper was one of the most practical that they had had for some time past. They had been told recently so much about the importance of technical education that it was quite a pleasure to hear a paper on planning, which was, of course, the basis of architectural design. There were several questions he would like to ask Mr. Osborne Smith; the first being in regard to the plan of the class-room which showed provision for five desks deep. Was not that contrary to the rules of the Education Department, who did not permit more than three desks deep? The Department considered that with five desks in front of him the teacher had to unduly strain his voice. That also brought them to the type of window they should adopt in dealing with schools for secondary education. There was the mullioned type of window, which was in use in such centres as the Universities of Oxford and Cambridge, and there was the sash treatment, the double-hung sash, which was practically universally in use, he believed, in the London Board Schools. Had the lecturer any preference for one or the other, and could he give his audience an idea of the relative cost of the two for giving effective light to class-rooms and schoolrooms? A design was quite dependent upon the type of window adopted, and for buildings for secondary education the mullioned type of window gave a more academic design; and, provided it gave proper light, it was one which many of them would naturally prefer. Then, as to the ventilating grate: he knew an architect's office where a ventilating grate had been put in by the makers on trial. When it was opened and used as a grate, the place was covered with soot and smut, so that it was never opened except to show a pupil the working of a ventilating grate! The lecturer's remarks about thoroughly lighting class-rooms and schoolrooms were patent to everybody, but had he any rule as to the amount of superficial area to the cubical contents of the building? There were great possibilities in the way of making corridors more attractive, though not much could be done with a 7 ft. wide corridor. With a 10 ft. corridor, and sufficient light, a picture gallery could be arranged, and the gallery would then have a certain amount of character which it would not otherwise possess. In using the double-hung sash-window, he supposed they could not do better than adopt the principle of the London School Board. That answered the purpose of ventilation by means of the transom light. In the matter of cleaning from the inside there was no doubt that the "N. A. P." windows were admirable for the purpose. As to floors, he thought that as there was so little difference in cost between ordinary combustible timber floors and floors made with coke-breeze concrete and steel one should naturally use coke-breeze floors. As to ventilation, he did not quite understand the lecturer, who said that he provided one or two flues to each room, and one or two openings. Would not the results vary from time to time, and in the different rooms? He (the speaker) thought that the way to ventilate such buildings was to carry off by flues in the chimney-stacks, because they were always more or less warm.

Mr. W. H. Seth-Smith, in seconding the vote of thanks, said the paper embodied a large amount of experience, and was of great value. In view of the projected legislation on the subject of secondary education they might expect that some of the remarks of the lecturer would be considerably modified in time. In answer to the last speaker he might say that the Education Department had nothing whatever to do with high schools. The Department was responsible for elementary education, while the Charity Commissioners had to do with the endowed schools, so that the rules of the Department as to cubic contents and floor areas did not affect high schools. Otherwise the lecturer would not have advocated 10 ft. as the height of the class-rooms.

Mr. Osborne Smith: What I said was that 12 ft. was ample. It is unnecessary to go beyond.

Mr. Seth-Smith said he was quite agreed, and he thought that certain rules of the Department were perhaps a little excessive. Those heights were not always necessary, especially where the ventilation had been carefully considered. He quite agreed with the lecturer as to the difficulty, and the enormous cost, of adapting an old building, and in giving advice on that point they would do well to recommend

that old buildings on a site should be cleared away, even on the score of cost. Alterations and adaptations involved not only the sacrifice of planning and convenience and health, but the cost was almost always prohibitive. He was very glad that the lecturer insisted so much on aspect. He (the speaker) had had to do with the planning of several buildings of this kind, and he had always insisted upon getting the maximum sunlight, without inconveniencing pupils in their class-rooms. He would like to know the lecturer's opinion as to the minimum distance between the end wall where the teachers' desk is and the front desk. The lecturer in his plans showed them rather close together—much closer than the Department would allow; but he (the speaker) did not think there was any objection to it if the room was well ventilated, especially as it was a saving expedient, which was a consideration in this class of school. As to the position of the fireplace, he thought the best place was between the door and the teacher's desk, otherwise there would be a draught passing from the door across the teacher. The lecturer would say that heat was lost by having flues so near to the door, but in order to avoid draught he (the speaker) thought that was necessary. As to the ventilating fireplaces, he had found them useful, but he advocated the outlet from all such grates being above the stove itself, otherwise there would be a down current. The lecturer apparently advocated single desks. Undoubtedly they were the best for supervision, but they were very expensive. He would like to know what kind of plaster the lecturer preferred for finishing walls internally—whether the more impervious cements or otherwise; or whether he had tried adamantine, which made a very good surface. Some other questions he would like to ask were: The lecturer's ideas as to the standard of floor area of the hall per child? Whether in any of his schools he had been asked to provide a museum? (he, the speaker, had been asked to do so). As to the isolation of the music-room (sometimes a very costly arrangement); and the desirability of insisting upon provision for ample supervision by mistresses? In reference to lavatory and water-closet accommodation, it must be remembered that in a building that was not a domestic building a very much smaller percentage of apparatus was all that was necessary. In reference to the uses of the hall, he thought that the lecturer's reasons for preferring an isolated hall were excellent. Another advantage of the isolated hall occurred at the periodical examination. Absolute quiet was required on such occasions, and, where the class-rooms opened out of the hall, it was extremely difficult to isolate the desks and obtain this. In planning a building care had to be taken in regard to noise from the streets. He knew a large and expensive school in London where double windows had had to be provided in order to keep out the noise. In the new premises for the Association this point would have to be very carefully considered. Then, as to the gallery of the assembly hall, did the lecturer provide room for one or two rows of seats? and did he see any objection to placing blinds on the transome instead of carrying them up to the top of the ventilating hopper? One of his (the speaker's) greatest difficulties in this kind of work had been to obtain absolute isolation between the closets and the corridors, and to prevent, in hot summer weather, the smells passing to the main building. He did not find that one lobby was sufficient, or even two. Hollow walls weakened a building very much, and where possible they should be avoided. He was sorry that no head mistresses of schools were present that evening to take part in the discussion.

Mr. Howley Sim said he would like to know how the corridors in some of the lecturer's plans were lighted. As far as he could see, light was obtained only from the two ends of the corridors. The lecturer had made a great point about the through ventilation of class-rooms. The fanlight of the door was some considerable distance below the fanlight of the window, and it did not seem at all certain that a through draught would be obtained. Even if that were so, would not the cold air fall upon the heads of the pupils in the rooms? If they put the fanlight over the door on a level with the ceiling that difficulty might be obviated.

Mr. Osborne Smith: That is where they are always placed.

Mr. Howley Sim, continuing, asked what were the ages of the children who attended the schools. He should like to know also whether the class-rooms were warmed entirely by the open grate? The open grate was very effective, but to warm a room a fire had to be lighted a long time before the room was to be used. In regard to lavatory arrangements it was very difficult to get any taps that were perfectly suitable, and did the lecturer know of any that were free from objections?

Mr. R. Langton Cole said that he had two of his daughters at a high school, and his experience was that they suffered very much from draughts. It was possible to overdo cross ventilation, especially in winter. He felt that there was a tendency to provide too much ventilation of this kind.

Mr. L. Jacob said, in regard to the plan of a class-room, five rows of seats were not excessive. As to the position of the fireplace, he did not like putting it between the teacher's desk and the door. He thought that plans giving class-rooms on one or two sides of the hall were far the best. Corridors were objected to by masters and mistresses as being difficult to supervise. It was as well in large halls to have the gallery round as few sides as possible consistent with getting to the upper floors. He was surprised that the lecturer permitted lavatories and closets being attached to the buildings, for he thought, as far as endowed schools were concerned, that the Charity Commissioners objected to anything of the kind. It would be very convenient if architects were permitted to do the same. As to the arrangement of the chemical laboratory, the benches, according to the lecturer's plans, did not run with their ends to the windows, and he (the speaker) always thought that was desirable. The cloak-rooms also, apparently, had one door only, and most of them led out of a corridor. Was that a good arrangement, seeing that children coming in and going out might collide with one another? Would it not be better to provide two doors? Had the lecturer any objection to staircases leading directly out of the large hall? It seemed to him that some arrangement of that kind might be an advantage.

Mr. G. Tolley asked what provision was made, in the event of the galleries being used in connexion with any function taking place in the hall, for special means of exit.

The Chairman, in putting the vote of thanks, said that it was certain that when the question of the regulations for secondary schools was really taken up seriously, it would be very desirable to thoroughly thrash out the subject. The question of the assembly hall was a very difficult one where there were two sexes, and not one, to consider; and he did not think it was possible to arrange a satisfactory plan except on the corridor principle. Even when but one sex had to be provided for, it was not satisfactory for the class-rooms to enter directly out of the hall. Did not the lecturer consider that, where possible, it was desirable to have a corridor, rather than enter the rooms direct from the hall? He had intended to ask a similar question to that put by the last speaker in regard to a separate entrance or exit. He believed he was right in saying that in large secondary schools it was the rule to provide a separate staircase leading direct from the hall to the playground. It seemed an advantage to be under no control as to height of class-rooms in these schools as against elementary schools. Instead of having to provide a height of 13 ft. or 14 ft., he could build his room to the height of 12 ft., and obtain the necessary cubical contents by useful additional floor area.

Mr. Osborne Smith: 12 ft. is the maximum.

The Chairman, continuing, said that the size of the desk affected the area of the room; that could be the only objection to the single desk, which was superior to the dual if space could be afforded. He was rather surprised to see, according to the plans, that the lavatory, &c., arrangements were absolutely connected with the main buildings. No doubt it would be said that there were not the same objections to such arrangements in a high school as in an elementary school, but surely the same principles applied. In elementary schools there were no water-closets inside the building except occasionally for lady teachers; and whether it was permitted or not, he was inclined to think that it would be better to make provision in a building entirely separated from the main structure. In regard to music-rooms, some of them, according to the plans, were very close to the class-rooms! Did the lecturer make any special arrangement so as to exclude the sound from those rooms? or were the music-rooms used only when instruction was not being given in the ordinary class-rooms? In regard to the assembly-hall, the lecturer apparently always put the platform at the end of the room. What was his experience in regard to placing it on the long side instead? The question of the aspect of a room was a very important one. With regard to the position of a fireplace, his (the speaker's) experience was that the best position for it was on the right-hand side of the teacher, in the angle, but the misfortune was that that arrangement brought the chimney-stack in such an unfortunate place in the elevation. What the lecturer said about polishing the wood floors seemed extravagant and questionable; he would have thought that all practical purposes were answered in providing an ordinary woodblock floor without polishing. He would like to ask whether the lecturer followed the arrangements adopted in elementary schools as to the number of closets and lavatories for pupils, or did he consider that more were required in the High Schools?

The vote of thanks was then put and carried by acclamation.

Mr. Osborne Smith, in reply, said that in reference to children catching cold, what he said was that it was no use providing means for ventilation and warming unless the apparatus were used, and he emphasised that in order to convey the impression that it was not always used. He often had to explain to teachers the ventilating appliances—which was not surprising, for teachers could not be expected to know as much about ventilation, &c., as architects did. In reference to water-closets, &c., he had never found the slightest inconvenience arising from having closets and lavatories attached to the main building, and if proper precaution were taken by the provision of ventilated lobbies the sanitary offices were practically disconnected. He had never had any complaint of inconvenience due to this arrangement. In regard to the assembly-room, 350 children could be comfortably accommodated in a room 60 ft. by 30 ft., allowing for platform. Museum cases were sometimes arranged in the corridors, but he did not appropriate a special room for a museum. In regard to the finishings of walls, he generally used distemper and painted the bottom part upon ordinary plaster, using sometimes a cement dado, especially in the corridors, where there was much rubbing. As to music-rooms, they were not built as a rule because music lessons were not usually given while other classes were being taken. Class-rooms, built a little larger than the rest to hold a pianoforte, were used for the purpose in the after-part of the day. He had had to do with buildings where it had been necessary to isolate the music-rooms, and he put them in the roof and made a good non-conducting floor with silicate cotton and used double doors. With regard to five rows of seats in a class-room, he thought the arrangement was a good one. The nearer they approached a square the better for class-rooms, and 21 ft. by 19 ft. 6 in. gave a very good room for thirty single desks. The company with which he was connected did not use dual desks at all, and where they could be afforded single desks were preferable. As to the width of corridors, he would like to be able to make his 10 ft. wide and make picture galleries of them; but these things had to be paid for! In regard to the question of draughts, it was a mistake to suppose that because the fireplace was arranged in the angle therefore the teacher would feel a draught from the door. The assembly room and the class-rooms being both warmed, there could be no draught. The reason why the fireplace was placed in the corner was twofold. In the first place, they got the radiating surface nearest to the chilling surface, and if the fireplace were anywhere else there were more disadvantages than when it was placed in the corner. He would very much like to use mullion windows if he could, but the question of cost again operated,—unless they used wood, which in a stone country looked mean. The N.A.P. windows were good. Coke breeze floors, while good, were more expensive than the ordinary wood joist floors. He polished the floors of schools for sanitary reasons. All cracks were thus stopped up, and the children soon got used to the polish. They did not polish the floors like a mahogany table. He liked to provide two ventilating flues in each class-room, to above the roof, starting from the floor with two openings into the same flue. That arrangement made

a large number of chimneys, but it afforded an opportunity of making a special feature of them. He had nothing to do with the rules of the Education Department. He felt very strongly in regard to the sufficiency of 12 ft. as the height of the class-room. Whatever height above that they provided was wasteful and extravagant. He had built some at 11 ft. 6 in. and some at 12 ft. 6 in., but now he kept to 12 ft. As to the distance between the wall and front desk in a class-room, if they got sufficient room to pass and repass freely, that was all that was required. The best type of plan, in his opinion, was that with the corridor, if they could afford it. He would like to get all his class-rooms on the sunny side, but that was not always possible. As to the percentage of water-closets, it was found that three per cent. of closets and five per cent. of basins was about the right proportion. He had no experience of the platform being placed on the long side of the assembly hall. Cloak-rooms should have at least two doors, and he liked to provide double swing doors. He thought there would be objections to stairs leading direct from the hall on account of noise. In regard to panic exits, they were not needed, as it was not likely that there would be more than 400 children in the assembly hall at one time, and two staircases 4 ft. wide, leading direct to entrances, would allow ample means of exit in case of panic. He had never had any trouble with District Surveyors in the matter. In regard to the floor area in the assembly hall, a room for about 300 children was 58 ft. by 28 ft. He calculated for just the number in the school. He put galleries in the class-rooms sometimes, but not always. He did not approve the arrangement of the blinds at the transome referred to by Mr. Seth Smith. The sunshine came through the fanlight above the transome. As to the age of the children, in some schools there was a kindergarten, and the children were as young as six and seven; but they were of all ages up to twenty years. In regard to the use of a gallery in the assembly hall, it was necessary to determine whether the hall was to be used for school purposes only or for functions—prize distributions, entertainments, &c.—as well. If an important gathering was to take place, a hall was usually hired for the purpose, for an enormous room would have to be built to provide for parents and children at the same time. When a function was held in the hall, however, the galleries were used to accommodate one row of people, but usually they were used for nothing but passage ways.

The Chairman announced that the next meeting would be held on the 17th instant, when a paper would be read by Mr. L. A. Shuffrey on "House Decoration."

The meeting then terminated.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

FESTIVAL DINNER.

THE Festival Dinner of the Royal Institute of British Architects, in commemoration of the Sixtieth Anniversary of Her Majesty's Accession and the incorporation of the Institute, was held on Thursday, the 2nd inst., in the Banqueting Hall, Whitehall Rooms, Hôtel Métropole. The President, Professor Aitchison, A.R.A., occupied the chair. The following invited guests were present: — The Bishop of London, the Rt. Hon. the Lord Mayor, Dr. Collins (the Chairman of the London County Council), Sir E. J. Poynter, P.R.A., Sir E. Maunde Thompson, K.C.B., Sir J. Wolfe Barry, K.C.B. (President of the Institution of Civil Engineers), Sir William MacCormack (President of the Royal College of Surgeons), Sir William Godden (President of the Incorporated Law Society), Mr. Christopher Oakley (President of the Surveyors' Institution), Sir W. B. Richmond, R.A., Mr. Alfred Gilbert, R.A., Mr. George Frampton, A.R.A., Sir James D. Linton, P.R.I., Sir G. Scott Robertson, K.C.S.I., Sir Henry Howorth, K.C.I.E., M.P., Sir Henry Trueman Wood, Sir Stuart-Knill, Bart., Sir G. Young, Bart., Sir G. Hayter Chubb, Mr. W. Ellison Macartney, M.P., Mr. Thomas Hardy, Mr. W. R. Bousfield, Q.C., M.P., Mr. Hugh C. Smith, Governor of the Bank of England; the Hon. Willoughby Burrell, the Rev. Canon Clayton, the Rev. W. Bazely, Mr. R. M. Beachcroft, Vice-Chairman L.C.C.; Professor Corfield, Colonel Waller, R.E.; Captain Donaldson, Dr. Gervis, Mr. F. Layland-Barratt, High Sheriff of Cornwall, Captain Moseley, Herr H. Mathesius, and Mons. J. M. Poupinel. The following members and others were also present:—Messrs. F. W. Albury, J. Macvicar Anderson, C. B. Arding, W. Wallis Baldwin, T. Barnes Williams, Charles E. Barry, George Benson, Thomas Blashill, Edward Boardman-Boyce, C. W. Brooks, James Brooks, H. Brown, J. M. Brydon, William J. Bull, J. J. Burnet, W. D. Caröe, T. E. Colcutt, J. Collings, H. H. Collins, George Corson, H. O. Creswell, J. D. Grace, G. R. Crickmay, A. G. Cross, A. W. S. Cross, Percivall Currey, Thomas W. Cutler, T. Raffles Davison, Rudolf Dircks, Arthur Dixon, John Dunn, William Emerson, Robert Evans, Robert Evans, jun., W. M. Fawcett, H. L. Florence, Charles Fowler, Ernest George, William Godden, William Goldring, Alexander Graham, G. E. Grayson, E. A. Gruning, Albert L. Guy, W. W. Gwyther, Axel Haig, Edwin T. Hall, F. H. A. Hardcastle, W. H. Harrison, Jas. Hine, George Hornblower, F. C. Hunt, E. B. l'Anson, Benjamin Ingelow, Lewis H. Isaacs, H. O. Jenkyn, George Judge, Zeph. King, G. F. Lambert, W. J. Locke (Secretary), E. H. Martineau, H. E. Milner, James A. Morris, Andrew Moseley, E. W. Mountford, James Neale, G. Northover, John Norton, A. E. Lloyd Oswell, H. A. Pelly, F. C. Penrose, H. R. Perry, Horatio Porter, Hampden W. Pratt, Marshall Robinson, T. R. Ronald, E. O. Sachs, W. H. Seth-Smith, George Sherrin, John Slater, H. B. Smith, Hugh C. Smith, J. Osborne Smith, P. Gordon Smith, A. Saxon Snell, H. Saxon Snell, Lewis Solomon, Henry Spalding, N. J. Stanger, H. H. Statham, R. S. Stokes, William Strang, W. H. Strudwick, A. W. Tanner, Henry Tanner, J. C. Tanner, Herbert Tayler, Sir John Taylor, K.C.B., Lewis Thomas, Arnold Thorne, W. H. Thorp, Silvanus Trevail, Frederick Wallen, Paul Waterhouse, T. H. Watson, Aston Webb, William White, Alfred Williams, W. E. Willink, W. S. Witherington, H. A. Woodington, William Woodward, Chas. H. Worley, R. Selden Wornum. The following journals were also represented, viz.:—The *Times*, the *Builder*, the *Standard*, the *Daily News*, the *Morning Post*, and the *Central News*.

The President, in proposing the toast of H.M. the Queen, said that the Institute owed her a peculiar debt of gratitude for bestowing each year the Royal Gold Medal on the architect selected by the Institute for that honour. The honour was not confined to the architects of this country, but was conferred upon the architects of all civilised countries where architecture flourished, and in this way English and foreign architects were made to feel that they were one body, determined to make their great art famous.

The President also gave the toast of "H.R.H. the Prince of Wales and the Royal Family."

Mr. J. Macvicar Anderson, Past President, proposed "The Houses of Lords and Commons," and in doing so said he would refer to the Houses of Parliament as ancient edifices, and as ancient edifices those buildings called forth their reverence and their affection. Unfortunately there were those who had no sympathy with the light and shade that time alone could impart, and which gave the greatest charm to such edifices. Referring to the House of Lords, he said that only the previous day he had heard of a dear old tower, attached to a church in Cornwall, which was threatened with destruction. There were those who had no appreciation for ancient work. One Goth had subscribed 1,000*l.* on condition that the tower should be removed and a modern one put in its place; other sums had been given on similar conditions; and, worst of all, the vicar or rector of the parish—he who of all others should be expected to preserve such an ancient landmark—aided and abetted them. If the tower were removed, its place would be taken by some lofty Babel tower, a monument alike of the conceit and ignorance of its promoters. Such vandalism, he hoped, would be prevented. There was a well-known law in architecture as to obtaining a due and just proportion of window and wall space in an edifice, and he thought that even the most ardent admirers of the House of Commons must admit that the oratorical voids in that assembly have assumed an enormous disproportion to the wall spaces of useful work; but notwithstanding these and other influences of time, they must all hope that these ancient edifices would withstand the ravages of future centuries. With the toast he coupled the names of the Bishop of London and Mr. W. G. E. Macartney, M.P.

The Bishop of London, in the course of his reply for the House of Lords, said it was pleasing to think that a society of architects had resolved itself into a society for the protection of ancient buildings. He then briefly and humorously referred to some of the advantages of a second Chamber, and concluded by saying that so long as the House of Lords rendered advice in measures inaugurated by the House of Commons—so long as it did that, with the gravity and wisdom, consideration and attention to business which characterised its proceedings, it deserved and received the approbation of the country.

Mr. Macartney, in responding for the House of Commons, said that that body occupied one of the lasting monuments of the genius of British architecture, and he trusted that in the future, as in the past, those who had the privilege of conducting the affairs of the nation in that magnificent palace would be inspired by the great traditions which no doubt occupied the attention of the Institute of British Architects, and which ought always to influence the representatives of the nation.

Mr. Aston Webb then proposed "The Lord Mayor and Municipal Corporation." As architects they welcomed the Lord Mayor because he and the Corporation held a power over matters which very much interested architects. With the Corporation lay the power to realise to a great extent the ideal cities which architects naturally had in their minds—cities with broad streets bright and clean, with trees and parks and open spaces; cities well drained, supplied with wholesome and pure water; cities with happy populations as far as laws could make them so; and cities (and here as architects they were specially concerned) which possessed buildings of a municipal character which added distinction to the city or town in which they were placed—buildings in which painting and sculpture had combined with architecture in making them all that art could make them—buildings which strangers would come from far to see, and which should represent, as much as art could, the beauty and dignity of city life. It was work of this kind that Lord Mayors and Municipal Corporations had in hand.

The Lord Mayor, in the course of his response, said that the Institute of Architects was commemorating the sixtieth anniversary of her Majesty's Accession, and the incorporation of the Institute, and that afternoon they had been celebrating in the City the anniversary of one of the grandest old buildings in London—viz., the two hundredth anniversary of the opening of St. Paul's Cathedral—a building which was, perhaps, the greatest monument to any man who ever followed the profession of an architect. By their character, past Lord Mayors had built up the Corporation of the City of London, and was there any reason why they should be swallowed up by the County Council? They were an old-established Corporation, and they would be glad to see the County Council become a similar institution, but that could only be accomplished in the course of time; and, in the interval, the Council would be better occupied with the business of the County of London rather than in attempting to destroy the old City of London. As a consequence of the great fire in the City, it was equally important to the City, as to the great profession to which they belonged, that something should be done in order that such a catastrophe might not occur in future. He hoped that the Corporation would shortly be able to make some suggestions in regard to the matter, and if any members of the architectural profession could give him any hints on the subject he should be happy to lay them before the Corporation.

The President proposed the toast of "Art, Literature, and Science." He gave Art first for many reasons; but it was only necessary to name two, viz., that it was the first of the fine arts that appealed to man before Literature or Science existed; and, secondly, because it was that form of beauty that nature offered freely to the eyes of every one who was not blind, and she offered this for man's solace, purification, and delight. All writing, from the Egyptian hieroglyphics to the Chinese, was shorthand from pictures. We saw in the painted bas-reliefs of Egypt and Assyria that history, that catalogue of great national events, was given by a series of pictures. Everything that nature offered to our eyes was sculptured and painted, and these coloured forms produced for us the beautiful, the lovely, the sublime,

and the terrible; so that, by the various emotions they raised, our souls might not perish through stagnation. In all civilised countries whole classes of gifted men devoted themselves to the portrayal of these evanescent scenes of beauty, sublimity, or terror; and they did more when man was the subject chosen for their chisel or their brush, for they not only portrayed his form and action and gave us ideals of beauty, of swiftness, or of strength, and of those forms that denoted the possession of courage, wisdom, benevolence, or malignity, but re-created for us the stirring scenes of the past. Among these artists the architect was enrolled, though he was like the chariot drawn by the divine and earthly steeds, and had to combine the useful with the sublime. In this he was assisted by the sculptor and the painter. They had that night with them the President of the Royal Academy, who took the visual fine arts under his wing. Though Literature was a later creation than Art, it had thrust itself to the forefront, for it had time and thought in its hands, and had associated music and melody with itself. No fine art could invade another's domain, for, could one die out, all the rest would not supply its place; a beauty might have her form immortalised by the sculptor, but the painter alone could give her colour. The useful prose had borrowed some of the adornments of her elder sister, poetry, and gave melody and rhythm and eloquence, while in the depiction of conflicting emotions it rivalled poetry itself; still it was to our poets we must look for immortality, for in poetry was concentrated the pith of thought crystallised and polished. He knew not if we could claim equality with the past, in the masterpieces of the visual fine arts, but we might do so with the poetry. Our poets, too, have given "Jewels five words long, that on the stretched forefinger of old Time sparkled for ever." They had with them that night the keeper of all the best poetry and prose that had come down to them since literature was invented, Sir E. Maunde Thompson, of the British Museum. Lastly, he came to Science, or rather to those who had turned the discovered laws of nature into man's obedient servants; and in that respect Great Britain was better off than with poetry. They did not know that all the world estimated Shakespeare, Milton, Burns, Shelley, and Tennyson as we did, but it would hardly deny them the discoveries of Watt, of G. Stephenson, of Arkwright, and of Wheatstone. He did not want to be insular, and it would ill become them to forget Edison, who had given them the electric light. The chemist, the mechanician, and the engineer had revolutionised the world for them. Puck's boast that he could "put a girdle round about the world in forty minutes" had been outdone by the telegraph, and did not the engineers "rift the hills and roll the waters, flash the lightnings, weigh the sun?" He thought he might safely say that from the scientific discoveries of the last hundred and fifty years mankind were better fed, clothed, and housed than they ever were before, and that they were more numerous, more healthy, and longer lived. If life be happiness, the sum of happiness had been vastly increased. They had with them as a representative of science a distinguished engineer, Sir J. Wolfe Barry, whose Tower Bridge they all knew.

Sir E. Poynter, P.R.A., replying for Art, said it was a large subject, and he did not feel equal to giving that elaborate disquisition on the subject which the President seemed to expect from him, especially as he would have to deliver shortly an address on the subject in another place. Nor would he indulge in commonplaces and platitudes on the advantages of art as an education. He would rather turn to the alliance of the arts of painting and architecture as exemplified in the old friendship between their President and himself, which began when he was a boy in Rome, which was strengthened and cemented by the admiration which they held in common for their late President, Lord Leighton, who was at that time a youth of twenty-three, and full of his first enthusiasm in that passionate devotion to art which was the object of his life. Their President had extended his friendship and kindness to him all through his (the speaker's) life, and he could not say how much he had profited and how much he owed to him. Their President had alway entertained exalted views as to the dignity of art, and he had never failed to express them. In the name of the painters and sculptors, he thanked the Institute for the high compliment they had paid them.

Sir E. Maunde Thompson, K.C.B., responded for Literature. He said he had more acquaintance with the outside than with the inside of books, and he could almost weep when he paced down their long corridors at the British Museum and saw the charnel-house of literature all lying on their shelves, and no one referring to them. His only consolation was that the paper upon which they were printed was so abominably bad that final dissolution must come and save posterity from a monstrous amount of literature. But there was yet another consolation. Although there was this great mass of literature pouring into the world in the present day, we were not bound to read it. He was at the head of a great institution, which was not only a library but a repository of art, and he wished to express his thanks to the President for the many kindnesses they had received at the Museum from him whenever there was any question of arrangement in their collection of antiquities.

Sir J. Wolfe Barry, K.C.B., in responding for Science, said that, as the son of an architect who must have been one of the original members of their Institute and a President; as the brother of one of their past Presidents, and brother of one of their Vice-Presidents, it gave him much pleasure to be present that evening, and to be called upon, as President of the sister society, the Institution of Civil Engineers, to reply for Science. The particular branch of science with which he and they were connected was applied science, and that science had been well described as the hand-maid of art. It was a servant, useful, sturdy, and trustworthy, but like such servants in ordinary domestic life (who possessed those qualities) it was not to be trifled with. The science they had to deal with in their profession had its sanitary branch, which was of great importance to the health of the world, as statistics of the duration of life showed; and another branch of the application of science was that known by the word "constructional," which involved making the most of those new discoveries in various kinds of materials and various means of executing buildings, which of course appealed to architects who had to deal with new problems of a very different kind from those which were dealt with by the ancients, from whom architects obtained their great principles of art. As time went on, the newer developments of science in the way of construction would have more and more to take their proper place in the art of architecture. Another application of science which called for great attention in this great City was that which had been alluded to by the Lord Mayor, namely, in trying to make large blocks of buildings less susceptible to the ravages of fire than was the case at the present moment. A few days ago he visited the scene of the great City fire, and one could not help being struck with the fact that there must be something very faulty with the construction of modern buildings that they should fall down and be destroyed in a few hours from a fire which, he supposed, if it had been attacked in the first half-hour, would, under proper modes of construction, have had no great danger to any surrounding houses. He thought he was right in saying, therefore, that architecture had much to learn from science, and that science had something to learn from art. He could not see why things which were useful and served a distinctly utilitarian purpose should necessarily be ugly. He thought that engineers might with very great advantage study some of those great principles of beauty with which architects were more particularly concerned. He recollected that his father used to impress upon him that the great principle of a well-designed and beautiful structure was great attention to proportion. He thought that engineers in the present day might very well consider whether some of our bridges, stations, and other structures might not be a little more beautiful than they are.

Dr. Collins, Chairman of the London County Council, then gave the last toast, viz., "The Royal Institute of British Architects and Allied Trades" (*sic*). He cordially reciprocated the sentiments of the Lord Mayor in saying how close should be the association of municipal enterprise and architecture. Before the year 1837 architecture had no learned Association or Royal Society to represent it. The Charter of the Institute was obtained in 1837, and they were celebrating that night their sixtieth anniversary. No doubt great progress had been made since 1837, and the Institute had had as members those whose names would long survive. The speaker then referred to the close contact of architects with the London County Council, referring to the London Building Act of 1894, with its 218 clauses, and the Tribunal of Appeal which was instituted by that Act. The London County Council recently required the assistance of an architectural critic upon the work of the Works Department, and a gentlemen of ability had been found in the person of Mr. Gruning. He would also take that opportunity of saying how much London owed to Mr. Blashill, the Superintending Architect of the Council. In that connexion he might refer to the careful supervision, under the direction of Mr. Blashill and the District Surveyors, of the stands, &c., which were erected for the sightseers at the time of the Queen's Jubilee. Alarming prophecies of catastrophe had been made in connexion with that event. The County Council had a keen regard for the preservation of buildings of historic interest and architectural value. At a recent conference, to which the Institute sent representatives, they considered how best to preservesuch buildings, the existence of which they learned only when they were threatened with destruction. It was suggested that they should make a register of historic buildings, and they were now seeking powers to that end. He must congratulate the Institute upon the high repute in which it was held. It was, he believed, the only recognised architectural body which was incorporated under Royal Charter, and he was glad to know that there were some five representatives of the allied societies with them that evening, including representatives from Wales, Scotland, Ireland, and New South Wales. They must all think, as they walked through the principal streets, that, after all, there was a vast amount of ugliness and prosaic quality about our public buildings, and, no doubt, they sometimes asked how it was that with such an array of architectural talent things were not better than they are. The Institute was an examining body, and the teaching of architecture was the province of the Architectural Association, the Royal Academy, the National Art Training School, and one or two other institutions; but it was a matter of agreement, he thought, that architecture was not at the present time taught in London in a manner worthy of the City. He had often wondered why architecture had not received that recognition in our Universities which it ought to have done. They heard so much of the humanities, but, after all, were not literature and architecture humanities; the exquisite in form, that which was implicit in thought. Architecture, as a German philosopher had described it, was frozen music—harmony crystallised into form; and he (the speaker) thought it should find some place in our University examinations. He was not sure whether it was too much to dream of a Municipal School of Architecture in London, and he would be glad to use any influence he might possess with the University of London to adopt such a measure.

The President, in reply, said that of all the fine arts practised in London there was none that was less thought of than architecture. He would ask them to consider architecture in two of its phases, its obtrusiveness and its permanence. Painting and sculpture might be put into a room, or cupboard, but architecture met people everywhere, and surely that was a reason why a city should be made beautiful and not ugly. Then in regard to the enduring character of architecture, although it was true that large and important buildings might be destroyed by invaders, by natural convulsions, or by neglect, yet if these two former did not occur and care were taken they lasted for centuries. In spite of the lapse of time, of fire and earthquake, they had still the remains of the Parthenon at Athens—a building which caused the perennial admiration of those who were sufficiently educated to understand its beauty. Then there were the remains of architectural splendours of Rome and elsewhere; but in his opinion insufficient notice was taken of the claims which architecture made on the admiration and gratitude of mankind. Architecture taught many lessons and excited many emotions that could be raised by it alone. No one who had visited the interior of the Pantheon at Rome could have forgotten the impression of its proportions, size, and lighting. It was the work of a great genius whose name had been lost, and it affected thousands, and had done so from its creation. It was consequently

a matter for the consideration of the architect to see if his genius and his study would enable him to produce something equal, though not like, such a building as the Pantheon. He thougt it was the duty of every patriot in the country to endeavour to make the city he inhabited beautiful. It must be remembered that the great works of architecture that he had referred to must be visited, for they could not be exported for the benefit of people in other lands. The Institute had done what it could to improve the education and to raise the aims of the young architect. He wished that more could be done, but the difficulty was to know how to do more. Every man who embraced the profession should endeavour to make himself as capable as possible, and should regard architecture not as a mere means of making a livelihood, but something by which his country might be distinguished. He might say that the excellence and progression of their great profession are more dear to him than anything that could happen to himself. They must recollect that Aristotle considered architecture as one of the master arts of the world. In regard to the street architecture of London, M. Paul Sedille expressed in a book he wrote about the architecture of England the opinion that its domestic works were admirable. He hoped and believed that genius would spring up to make the larger and more important buildings equal to those of any other country. The greatest hope and desire he had was that the next century should produce works of architecture in England which would vie with the great works of Greece, Rome, the Middle Ages and the Renaissance. He thought it was because architecture had got into the wrong groove that they did not succeed in producing work of the greatest excellence, and until that were remedied we should never proceed very far. The only people about whose progress in architecture we knew anything were the mediævals, and he could not help thinking, although he was opposed to imitation, that nothing could be better than the methods those people followed, and that if we tried to follow their methods architecture would again proceed on its way. They had with them that night two gentlemen from abroad, viz., Herr H. Mathesius, who had come to this country to study our architecture, and one of the secretaries of the Société Centrale of Paris, M. J. M. Poupinel, who had just handed him a telegram which he had received from his Society to the following effect:—"We pray you to present our most sincere and most cordial felicitations to the Royal Institute of British Architects on its sixtieth anniversary." The telegram was signed by the Vice-Presidents, MM. Hermant and Lucas and the Principal Secretary, M. Boileau. No doubt they would desire to send their sincere thanks to the Society for the great interest they had taken in the Institute and for their congratulations.

The proceedings then terminated.

THE REPORT OF THE GOVERNMENT OFFICES SITES COMMITTEE.

THE following is the second and, we suppose, final Report of the Committee which has been considering and taking evidence on the subject of the sites for proposed new Government Offices:—

"In continuation of our Report dated July 23, 1896, we beg leave to state that we have taken further evidence upon the plans laid before the Committee last year.

Having regard to certain criticisms made from an architectural point of view upon those plans, we have thought it well to examine representatives of the Council of the Royal Institute of British Architects, and other qualified members of the profession.

Various alternative plans have been submitted to us by these gentlemen, but whilst we have availed ourselves of some of their suggestions, we have felt unable, owing partly to the enormous cost involved, and partly to other considerations, to recommend their schemes generally for acceptance.

Upon a review of the whole evidence, we have arrived at the following conclusions:—

We are of opinion that the new public offices on the "Parliament-street" or "Great George-street" site should be erected mainly on the lines of Plan No. 1 in the Appendix to the Report of last year, with a frontage in a line with the frontage of the Home Office, and parallel to the east side of Parliament-street; but we recommend that the south-eastern corner of the new building should be square and not rounded. The land between this new frontage and the present west side of Parliament-street would, if this plan were adopted, become part of the public street; and, in our opinion there is no need to make special provision for separating the traffic at this point.

It appears to us reasonable, in view of the great metropolitan improvement here to be carried out at the cost of the Government, that the London County Council should be requested to consider whether they should not put into operation the powers possessed by them under the Public Offices (Westminster) Site Act of 1896, and contribute a share of the total value of the land, which under this scheme would become part of the public street.

We recommend the appropriation of this site for the Board of Trade, the Education Department, and the extension of the Local Government Board.

As regards the Whitehall site, having considered the alternative schemes for the War Office which have been placed before us this year, we adhere to the recommendation made in our Interim Report, being satisfied that a building satisfactory in appearance and accommodation can be erected on that site within its present boundary lines; and we are of opinion that the details as to the arrangements of buildings, courts, &c., should be entrusted to the discretion of the Office of Works, in conjunction with the architect selected. We think that a subway should ultimately be formed under the street between the War Office and the Admiralty.

Schemes have been submitted to the Committee by the Royal Institute of British Architects and by Colonel Edis for a widening of Charing Cross and of the northern part of Whitehall; but we cannot recommend that the taxpayers should be asked to bear the cost of this metropolitan improvement, which, if undertaken, comes more properly within the duty of the Local Authorities.

We, however, strongly advise that the Mall should be opened into Charing Cross on the north side of Messrs. Drummond's Bank.

We do not contemplate the passage of any other than light traffic through the Mall, and are satisfied that the skill and experience of the police would supply satisfactory means of overcoming any difficulties of traffic which might to some extent follow such opening.

We think that no decision should be arrived at as to building on the triangular site in Spring Gardens until the houses standing there have been removed, and the ultimate requirements of the Admiralty considered.

We recommend that Nos. 11 and 12, Downing-street, occupied respectively as a residence for the Chancellor of the Exchequer, and as an office for the Patronage Secretary to the Treasury, should be removed, as unworthy of the site they occupy; but we are of opinion that the principal block of No. 10, the historic residence of the First Lord of the Treasury, for reasons of practical necessity and on account of its associations, should be retained, the Downing-street front being masked by erecting a new building with a good architectural façade, and the Park front being cased in stone, so as to harmonise with the north and west fronts of the old Treasury buildings, and the garden ground being enclosed with a screen or railing of handsome design.

We do not recommend any further building on this site. We are of opinion that whatever other office accommodation is required, which cannot be conveniently found in existing Government buildings, should be provided for by an extension of the Great George-street site in the direction of Delahay-street and St. James's Park, in which case some readjustment of the arrangement at present shown in the plan of the Office of Works might have to be made."

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE.—At the general meeting of this Institute on the 1st inst., Chancellor Ferguson, F.S.A., in the chair, Mr. C. Edwards exhibited twelve Romano-British pewter vessels, part of a remarkable deposit of thirty-three vessels found at Appleshaw, near Andover, by Rev. G. Engleheart. They consisted of three round dishes of about 15 in. in diameter, ornamented in the centre with geometrical patterns. The other nine vessels were cup-shaped, resembling well-known types of Samian pottery. A small dish in the shape of a fish, and having an ornament in the centre of a fish, as well as a shallow circular bowl having the symbol ☧ on its base, show their connexion with Christianity. It was announced that the British Museum had acquired the whole collection.—Dr. Wickham Legg read a paper on the "Eastern Omophorion and the Western Pallium." Many years ago G. B. de Rossi had pointed out to him that the modern vestments of a Greek bishop corresponded to those of an emperor or consul: the *stoicharion* and *saccos* to the two undergarments shown in a consular diptych, and the *omophorion* to the consular scarf. The *epigonation*, not seen in the diptych, Dr. Legg referred to the lozenge-shaped ornament seen on the emperor and his courtiers in the mosaics at Ravenna. With the aid of illustrations from mosaics and pictures, the relation between the two forms of omophorion and pall, the one broad and silken, the other narrow and woollen, was discussed, and numerous points of resemblance in detail pointed out. The pall in the East was the distinctive episcopal ornament, much as the stole is considered the distinctive presbyterial ornament in the West.—Mr. H. S. Cowper gave an account of the examination of a "bloomery," or old iron smelting furnace, at Coniston. Very little is known of these sites, which in the Furness district are numerous, and hitherto no attempt has been made to elucidate them by excavation. It is known that the Abbey of Furness had three smelting hearths in Hawkshead parish, and that after the dissolution the smelting was leased to a private firm by the Crown. These, however, were stopped in the time of Elizabeth, on account of the damage to the woods, but the decree allowed the tenants to continue making iron for their own use. Heaps of slag are, however, found not only in the manor belonging to the Abbey, but also in the adjacent lay manors, and to the latter class the Coniston example belongs. The excavations conducted by Mr. Cowper and Mr. W. G. Collingwood failed to bring to light anything to put a date to the site; but the foundations of the circular hearths were small and rude, and point to very primitive methods having been in use. A very difficult point to explain is the fact that all such sites are close to a stream, and as the ore was brought a long distance, it is thought washing would have been done before its arrival at the furnaces. The actual situation of the mounds of slag in some cases renders it difficult to suppose that the stream was to drive a wheel for an air blast; and it seems possible that iron was wrought at every site as well as made, which might show the use of the stream. Mr. Cowper thinks, however, that in spite of the rude methods, many of these furnaces were post-Reformation in date, and used by the people for making iron for farm uses; but it may well be that different "bloomeries" represent very different ages.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The third meeting of the present session of this Association was held on December 1 at the rooms in Sackville-street, Piccadilly, Mr. Thos. Blashill, Hon. Treasurer, in the chair. Mr. Patrick, Hon. Secretary, stated that the Council that afternoon had considered the letter of a correspondent referring to the threatened demolition of the ancient and interesting "Whitgift Almshouses" at Croydon, and it had been resolved that a letter should be addressed to the Mayor and Corporation, and the Governor of the Charity respectively, asking them carefully to consider whether it is possible to preserve these useful and picturesque historical buildings, which are in good repair and apparently fulfil their purpose, and, at the same time, add so much to the attractiveness of the town.—The first portion of a most interesting paper was read by Mr. Andrew Oliver, on the buildings of "Vanished London." This was abundantly illustrated by a large number of scarce and valuable old engravings and maps of the London of the last two centuries and the early years of the present century. Amongst others exhibited were views of Furnivals Inn, Guildhall Chapel, the Stocks Market, and Ely Palace as it appeared about the year 1536. In this building died Chancellor Hatton in 1591. The last of the Hatton family died in 1772, when the property reverted to the Crown. Views of Holborn Hall in Shoe-lane, the site of which is now occupied by Messrs. Pontifex & Co's. works, and Bangor House were exhibited and described. In the discussion which followed, the Chairman and others took part, and Mr. Williams remarked that the first house rebuilt after the great fire in 1666 was still situated at the corner of Friday-street. Mr. Gould also spoke as to the actual position of Ludgate, and mentioned that when pulling down Paul Pindar's house in Bishopsgate it was found to be built entirely of oak which had been white-washed over, and was not of timber and plaster as supposed. The front elevation of this picturesque house is now, as our readers are probably aware, in the South Kensington Museum.

INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting of this Institution on the 7th inst., Sir John Wolfe Barry, K.C.B., F.R.S. (President), in the chair, it was announced that twenty-seven Associate Members had been transferred to the class of Members, and that 101 candidates had been admitted as Students. The first ballot of the session 1897-1898 resulted in the election of nineteen Members, thirty-two Associate Members, and five Associates.

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Illustrations.

McEWAN HALL, EDINBURGH UNIVERSITY.

WE give two illustrations and a plan of this hall, which was formally opened last week.

The plan of the hall is based on the form of the ancient Greek theatre; this form was adopted by the architect as best suited for an auditorium, and likely to give good acoustic results. The architectural treatment is the same as the rest of the new University buildings, viz., Early Italian Renaissance. The flat side of the semi-circle abuts on the Medical School on the west, while the principal elevation is directly opposite on the east. Here is situated the principal entrance, 30 ft. in height, and 16 ft. in width, flanked on each side by double pilasters, and crowned by a semi-circular pediment containing a carved representation of the ceremony of conferring Academic degrees. Besides this there are other six entrances to the hall from the outside.

The external wall is divided vertically by projecting buttresses containing niches for statuary. It is divided horizontally into three sections; the lower section is panelled and is pierced by the circular windows which light the interior corridor. The intermediate section is blank, with the exception of one panel which contains the inscription recording the donor's gift to the university, in these terms:—

HANC AULAM ACADEMICAM
GULIELMUS McEWAN
UNIVERSITATI EDINBURGENSI
LIBENS ANIMO DONAVIT.
MDCCCXCIV.

This section is divided from the upper by a band of Italian ornament, with panels at intervals containing the coats of arms of James VI. (the founder of Edinburgh University); the City of Edinburgh; the University of Edinburgh; the donor of the hall, Mr. Wm. McEwan, M.P. for the Central Division of the City; the late Sir Alex. Grant, Principal of the University; the late Right Hon. John Inglis, Chancellor of the University; the Right Hon. A. J. Balfour, Chancellor; Sir Wm. Muir, Principal; Sir Wm. Turner; and the late Mr. J. Christison, W.S., Trustees of the Hall.

The upper of the three horizontal sections is arcaded in red stone, and is surmounted by an architrave, frieze, and cornice, and an open balustrade. The height of the outer wall from the base to the top of the balustrade is 64 ft.

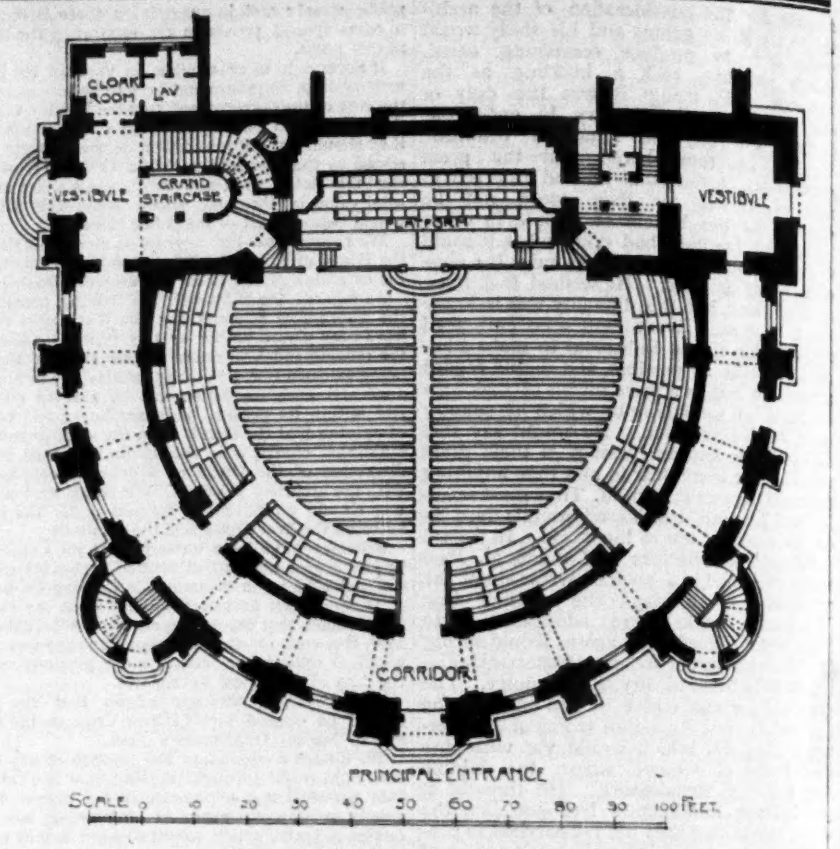
An interior wall concentric with the outer encloses the Hall proper, and, rising above the outer wall, to which it is joined by flying buttresses, supports at its summit the dome-shaped steel roof, which is surmounted by an ornamental lantern 30 ft. high. The total height from the street level to the top of the lantern is 130 ft. The outer and inner walls of the Hall are 12 ft. apart, and the space between them is, on the ground floor, utilised as a corridor.

This corridor is divided into compartments by pilasters and is vaulted, the panels of walls and vaults being filled in with fine red brick. The flooring is of marble mosaic. The corridor runs round the entire auditorium, and gives communication between the various staircases, entrances, and exits.

The entrance to the principal staircase is from the quadrangle of the University buildings. This staircase is oblong in form, and is carried on pillars and arches which are vaulted; its broad, shallow steps are guarded by a balustrade of stone. The groined ceiling is decorated in colour, the main features being a series of coats of arms, including those of the late Rector, the Right Hon. J. P. B. Robertson, and the present Rector, Lord Balfour of Burleigh, besides those of the already-mentioned dignitaries of the University, which are placed on the outside wall. On the mosaic flooring of the landing are panels containing the arms of the donor, the City and the University.

From the first landing entrance is gained to the reception-rooms set apart for the assembling of the Senatus, distinguished guests, &c.

The staircases leading to the galleries are placed in the round projections at the south and north-east angles of the building. Two staircases are placed in each projection, one leading to the first gallery, the other to the second, so that the two currents of people going to and coming from these parts of the house, are kept entirely separate from one another, and greater facility of entry and exit is provided. From the corridor on the ground floor entry to the hall is gained by five separate doors.



McEwan Hall, Edinburgh. Plan.

The internal diameter of the hall is 106 ft., while the height to the dome light is 90 ft. This gives an ample floor space, and provides abundant room for the placing of two galleries.

The area floor is laid with blocks of oak in patterns, and in order to allow of it being used for other than formal academic functions the seats on it are of a movable character, only round the circumference are four tiers of fixed fauteuils, also in oak. The wall is panelled in oak up to the height of the first gallery.

The galleries are placed over the corridor on the ground floor, in the space between the outer and inner walls of the hall. The inner wall is opened up to the interior of the hall by means of an arcading of thirteen bays, each 15 ft. in width, and rising from the floor to the top of the arch a distance of 48 ft., upon columns of red Corsehill stone, supported as far as the balustrade of the first gallery by square moulded freestone bases, and surmounted by gilded Corinthian capitals. The pews in the galleries are of oak, placed on a sloping platform, and the galleries are also guarded by an open balustrade of the same material. These balustrades have central panels, those of the lower gallery being filled with appropriate designs, carved and gilded. At the wall head is a coved stone frieze and cornice. Above is a carved clearstory with circular windows 7 ft. in diameter, while the hall is covered in with a dome constructed of steel and panelled with wood. In the centre of this dome is a circular light 22 ft. in diameter, which, with the clearstory windows, lights the hall in the daytime.

The flat side of the hall, that abutting on the new University buildings, is reserved for the platform, and the arrangements of it are specially designed for University ceremonies, as the original conception of the hall was for purely academic purposes. At the back of the platform is a series of stalls, constructed of solid oak, for the members of the Senatus Academicus, University Court, &c., with special seats in front for Chancellor, Rector, and Principal. As, however, if restricted to its original purpose, the hall would only be used two or three times a year, Mr. McEwan expressed a desire that its uses should be extended, and that it should as much as possible be made available for high-class concerts. Following up this idea a magnificent organ, probably the finest in Scotland, has been placed in the hall. Considerable difficulty was experienced in arranging for the placing of the organ in a hall which was never intended for one. The construction of the organ was committed to the Hope-Jones Electric Organ Company, and as the nature of the mechanism admits of the organ being broken up into sections, a position was ultimately contrived for it. The organ gallery, carried on carved oak pillars, projects over the back row of stalls, and the great organ is placed immediately above. Two other sections of the organ are placed high up on each side of the platform recess.* All three are enclosed in handsome carved oak cases, gilt and coloured corresponding to the rest of the woodwork of the hall.

A movable orchestra has been constructed capable of holding 300 people. The framework is of light steel, the floor and seats of wood. It is made so as to fit over the stalls on the platform, and is so arranged that it can be easily taken to pieces and put away, and as easily put together again.

The hall is lit by electricity. Before arriving at the present arrangement a long series of experiments was made by the architect, and Messrs. King & Co., the electrical engineers, as to the best method of lighting the hall. The result is considered by all who have seen it to be most satisfactory. A large pendant hangs from the dome. Above the cornice, but concealed, is a series of lamps round the whole circumference of the hall, these throw a light on the decorations of the dome. The galleries are lighted by placing lamps concealed behind the pillars and the lower beams of the gallery fronts. The result of this concealed disposition of the lights is that the hall is lighted without the eye being distracted by the numerous small brilliant points of light from the lamps.

The complete design for the hall includes a great tower at the north-west angle rising to a height of 230 ft. The lower part only has been executed; it has been carried up to the height of the roof of the hall.

The great object of the architect in designing the hall was, not to give it the appearance of a hall designed to hold the maximum number of people in a given space, but to give it as much of a monumental character as possible, consistent with the requirements of a good auditorium.

R. A.

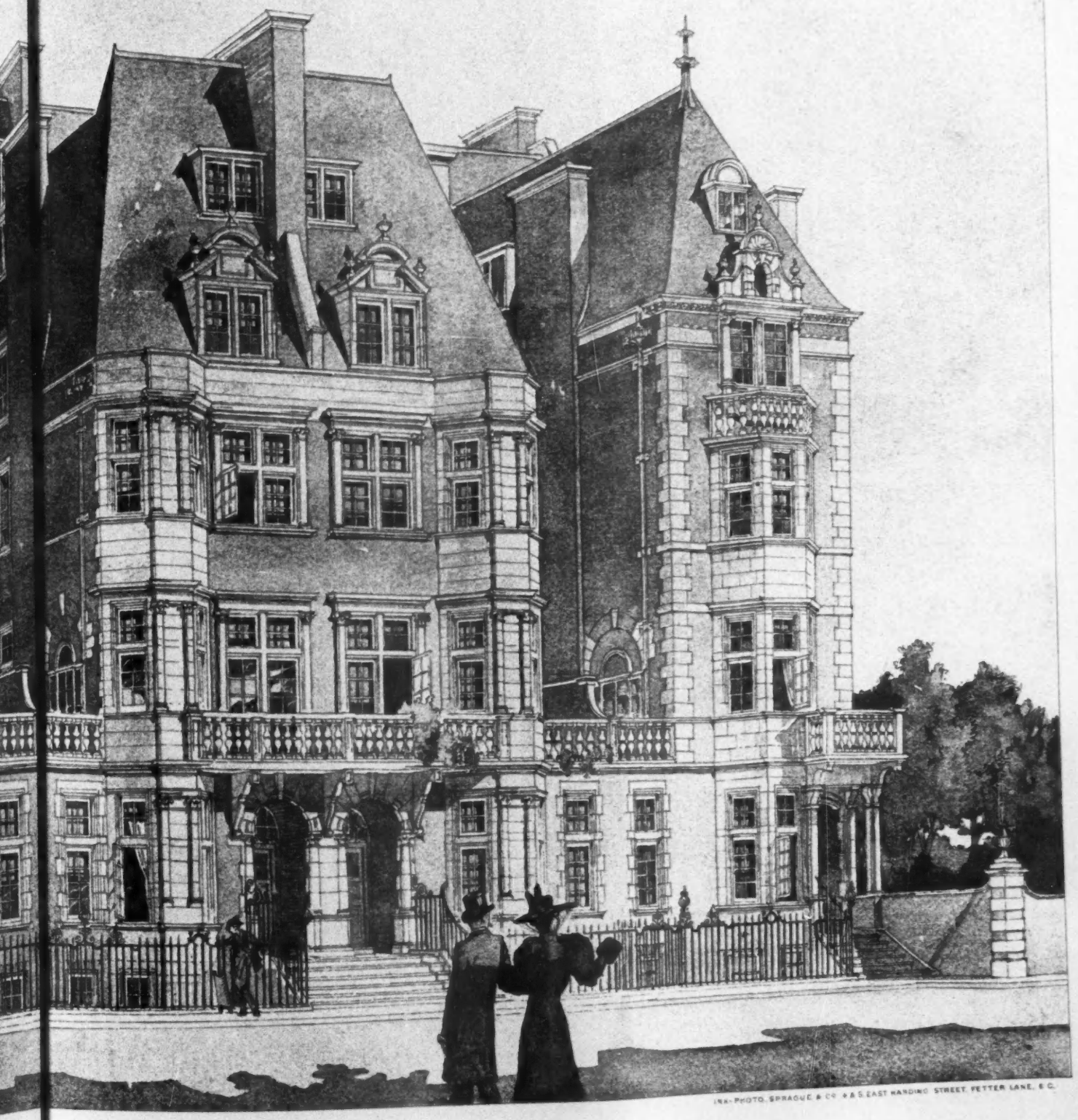
HOUSES IN SOUTH-STREET, MAYFAIR.

THE drawing shows the south fronts, towards South-street, Mayfair, on the Grosvenor estate,

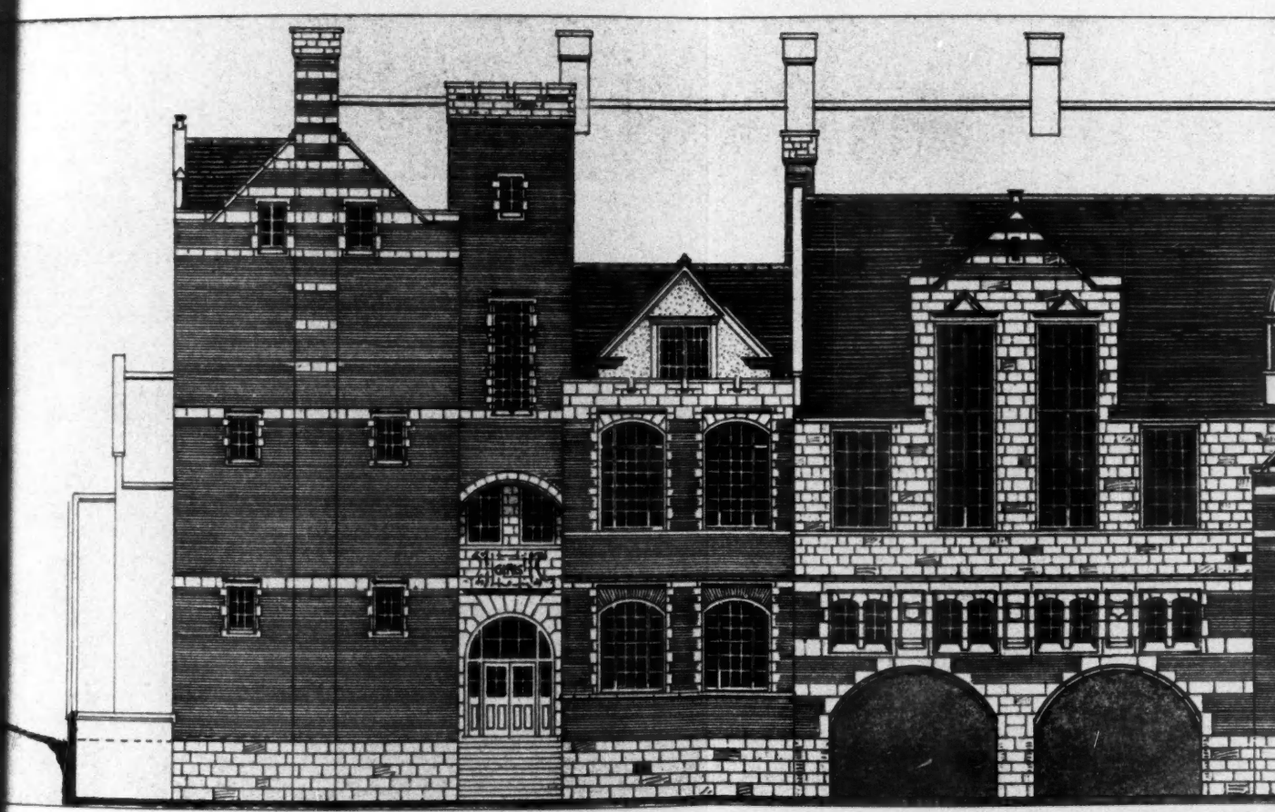
* This gets over the architectural difficulty, no doubt, but it is not a good way to arrange an organ from a musical point of view. Ed.

HOUSES IN SOUTH STREET MAYFAIR.

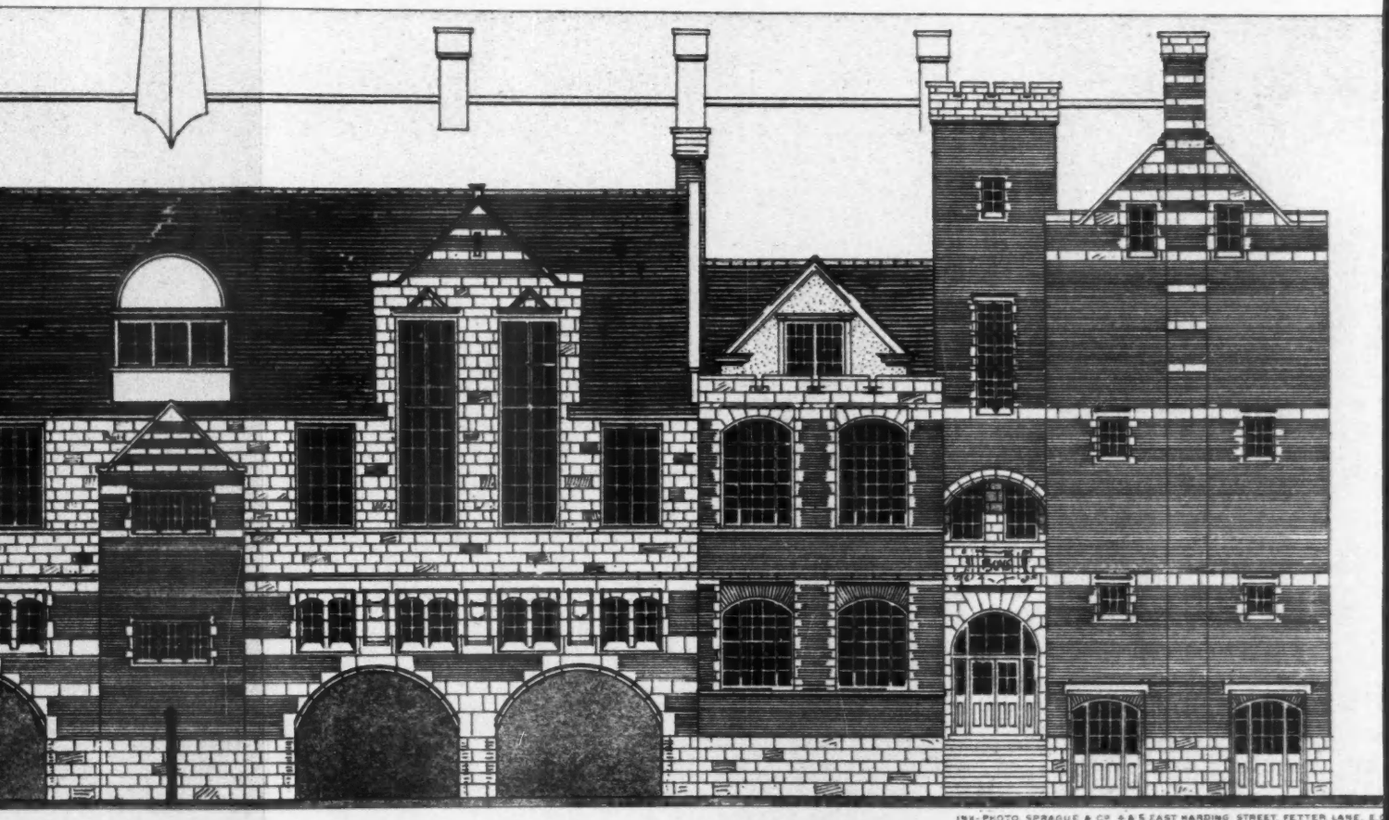
J·J·STEVENSON · ARCHT



INK-PHOTO. SPRAGUE & Co 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.



DESIGN FOR SCHOOL, SCARBORO

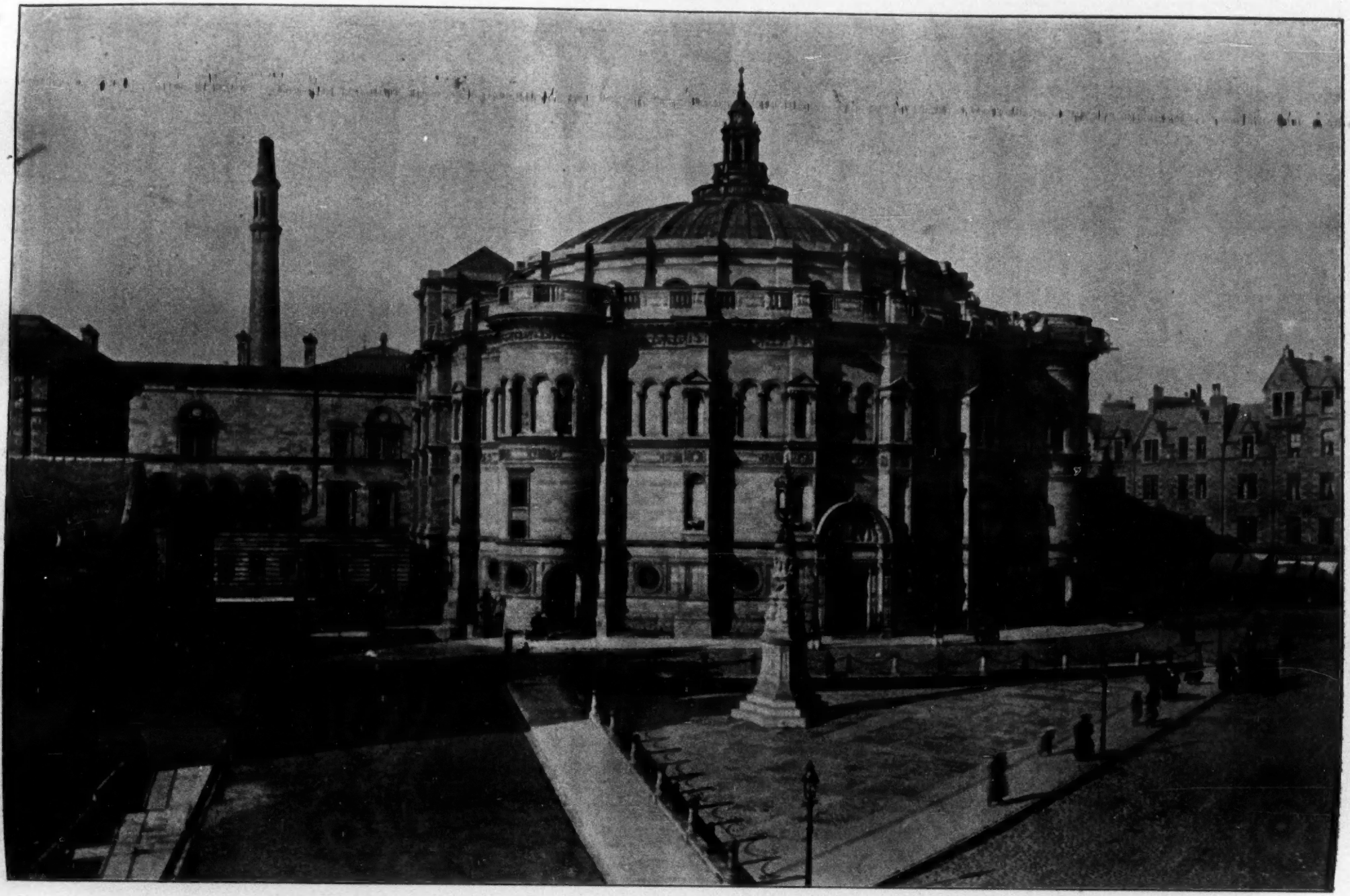


INK-PHOTO. SPRAGUE & Co. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

SCARBOROUGH.—By Mr. A. S. Jones, A.R.I.B.A.

MERCY
WHEREBY the dayspring from on high hath visited us: To give light to them that sit in darkness and in the shadow of death, and to guide our feet into THE WAY OF PEACE.
TENNANT POTTER.

"MERCY": DESIGN FOR ILLUMINATION.—By Mr. Tennant Potter.

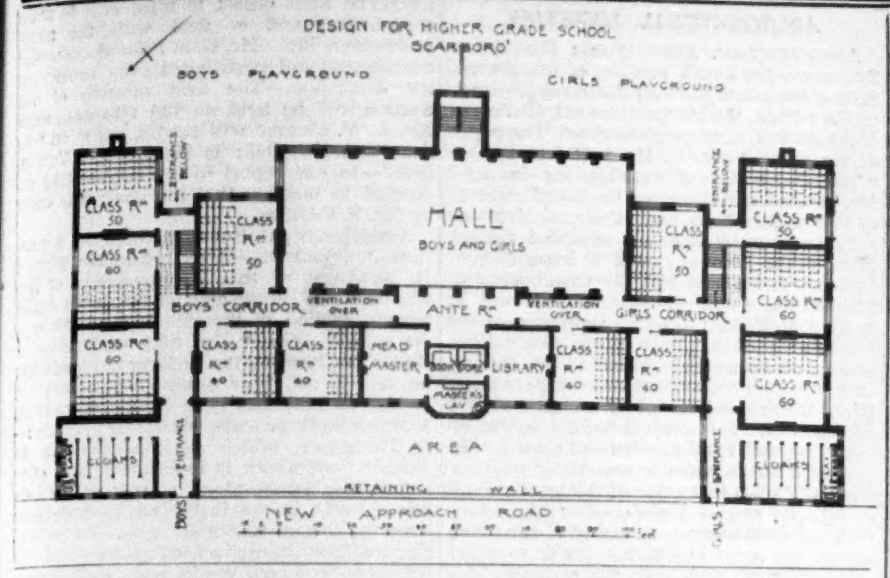


THE McEWAN HALL, EDINBURGH.—DR. ROWAND ANDERSON, ARCHITECT.
EXTERIOR VIEW.

THE McEWAN HALL, EDINBURGH.—DR. ROWAND ANDERSON, ARCHITECT.
VIEW IN INTERIOR OF LARGE HALL

THE McEWAN HALL, EDINBURGH.—DR. ROWAND ANDERSON, ARCHITECT.
EXTERIOR VIEW.

DESIGN FOR FRIEZE.—By Mr. Arthur Gwatkin.



of five houses now nearly completed, which have been built for sale by Mr. Willett, of Sloane-gardens, replacing smaller houses on the same site, no longer suited by their want of accommodation and modern conveniences for houses in this situation.

They are planned so that what are usually the backs of the houses, with the open spaces between them for light, are the main fronts towards the street; thus giving a more interesting elevation and more light and shadow than the usual unbroken line of street frontage. The backs of the houses, which face the public gardens belonging to the Vestry, are also designed as if they were principal elevations.

The street fronts as shown in the illustration are of red brick with stone quoins and steep slated roofs with mullioned windows and stone dormers, suggesting, though not following closely, some examples of old French domestic architecture. The floors throughout are fireproof. The houses are, of course, fitted with all modern conveniences and requirements.

Mr. J. J. Stevenson is the architect; Mr. Willett is his own builder. The carving has been executed by Mr. Lawton.

The drawing was exhibited at the last Royal Academy Exhibition.

DESIGN FOR HIGHER-GRADE SCHOOL, SCARBOROUGH.

THE principal floor in this design is planned to accommodate 600 children, distributed in twelve class rooms; one large hall and the central administrative department separating boys and girls. It being considered inexpedient that the boys and girls should both enter their respective class rooms directly from a common hall, separate corridors are provided.

Under the principal floor there are rooms for conducting instruction in cooking and laundry work, a gymnasium 20 ft. high, dining rooms, manual training room, heating chamber, &c., whilst under the large hall covered playgrounds are provided. The top floor is devoted to science rooms, containing chemical and physical laboratories, drawing-class room, lecture room, teachers' rooms, &c.

There is a fall of about 20 ft. in the ground from front to rear of building, which accounts for the school entrances being on a level with the proposed approach road, while the entrances on the playground side are on a level with the lower floor.

It was the intention to construct the whole of the floors and staircases of fireproof material, and the whole of the rooms and corridors were to be warmed by means of steam coils. The elevation was intended to be faced with red brick and local stone dressings, and the roofs to be covered with tiles. The elevation here reproduced is of the playground (or lower) side of the building.

The drawing was exhibited at this year's Royal Academy Exhibition.

ARTHUR S. JONES.

"MERCY": DESIGN FOR ILLUMINATION.

THE border in this design consists of two single branches of conventional foliage and lilies issuing from either side of a harp at the base, and interlocking at the top. Interlaced with these are the flowing ends of a scroll, which passing across the design bears its title, "Mercy," and the words "Whereby the Day-spring from on high hath visited us, to be a light to them that sit in darkness and in the shadow of death, and to guide our feet into the way of peace."

In the centre, on a diapered background, floats the figure of an angel bearing a cross, and looking upwards intercedingly to a crown which surmounts the whole.

The prevailing colours, in the original drawing, are shades of violet and grey, enriched with gold, and are painted in clear tints, instead of body colour.

The design is by Mr. Tennant Potter, and the drawing was exhibited at the last Royal Academy Exhibition.

DESIGN FOR A FRIEZE.

IN this frieze, which was designed by Mr. Arthur Gwatkin for a house in London, the prevailing colours are blues to yellow-browns; the ground is a rich dark blue, the flowering water-grass forming a kind of underprint, with a lighter wash of the same colour.

The iris leaves are a light green, springing from foliage of yellow-browns and yellows, graduating to green-browns. The effect is soft, and yet very decorative.

The design has since been produced by Messrs. Wylie & Lochhead as a 30-in. wide frieze with the outline in relief, and the colouring by hand in transparent oil colours.

MAGAZINES AND REVIEWS.*

THE *Architectural Record* gives an article to the work of an American architectural firm, Messrs. Clinton & Russell. An article on an old English house, Nevill Holt, will be of interest to English as well as American readers. Professor Goodyear outdoes himself in this number in his efforts to induce the reader to accept all the settling and spreading of walls and piers and arches in St. Marks and other ancient Italian buildings as architectural beauties contrived on purpose, and is driving his hobby to the point where it becomes merely absurd. He quotes a passage from Evelyn's diary about a visit to old St. Paul's, and the opinion of "Mr. Chichley and Mr. Prat" that "the maine building, which they found to recede outwards," had been built so *ab origine* for an effect of perspective, in regard of the height; but I was, with Dr. Wren, quite of another judgment." Wren had too much common-sense for such "fads," in fact. The Prospectus of the "Classic Design and Detail Company" is a good piece of humour; it would be out of date for this country, but we presume the editor of the *Architectural Record* has reason to believe that the satire is appropriate in the States.

The *Architectural Review* (Boston), No. VII. of the current volume, contains an illustration of the design submitted by Messrs. Howard Cauldfield and Mr. J. M. Lyle in the competition for the Armory at Providence, which is curious as an instance of the imitation of the French which is going on in America; the whole thing, both in manner and in the execution of the drawing, looks like a competition drawing for an Ecole des Beaux-Arts prize. The Shephard Memorial Church, by Mr. Harvey Shephard, is interesting, especially the carved redwood ceiling of which a separate illustration is given.

The *Engineering Magazine* contains an interesting article by Mr. A. D. F. Hamlin on "The Tall Building from an American Point of View," which is very reasonably and well written, and contains some good critical remarks. The following passage, in regard to the treatment of the window openings in these tall buildings, is worth quotation:—

"It is readily granted that multiplied repetition of an architectural feature is one of the surest means to the end of impressiveness. The Colosseum is justly cited in support of this proposition; the long vistas of English cathedrals furnish another illustration. But the feature thus repeated must possess intrinsic dignity or artistic value; it must have *scale*. This is precisely what office-windows do not and cannot possess. The office-floors average 10 or 11 ft. clear in height; window sashes more than 4 ft. wide are awkward to handle These are not heroic dimensions. The bays at the Colosseum average 20 ft. on centres and 30 ft. to 40 ft. in height; its four storeys equal the height ordinary ten or twelve storey office-building. The front of the Pitti Palace at Florence is most impressive, with a vast number of windows all exactly alike, but they are colossal. The three storeys of the palace are each nearly 40 ft. high. How to make 200 to 300 windows 4 ft. by 8 ft. each (or thereabouts) into an impressive composition is really the *crux* of tall-office-building designing."

The *Art Journal* includes an article on "Irish Lace" with some very interesting illustrations, and some illustrated notes on designs for wall-papers and book-covers. Mr. Snowden Ward's article on "Camera Craft" attaches, to our thinking, too much importance to the present artistic efforts in photography. He refers to a photograph in an exhibition, for instance, which "emphasised the brilliant colour of an outdoor scene and the delicate graceful lines of a light-costumed lady who forms its central object." We remember the photograph; the figure was not graceful or delicate; a painter would have made it so. That is the weakness of photographic pictures. An article on Mr. Dudley Hardy's work as a painter forms a good illustration of the gulf which separates photography from art. What photographer's arrangement could ever have produced these pictures?

The *Art Annual* is devoted to the life and works of Mr. Orchardson, one of the most intellectual English painters of the day. Among the illustrations one is struck by the admirable way in which his diploma work "On the North Foreland" comes out in black and white; it is a small and rather slightly executed painting, but in the reproduction it assumes a character of much more importance, and is certainly a design full of poetry.

The *Studio* (November*) also has its examples of book-cover designs, likewise a good many illustrations of Scandinavian carving, and also an illustrated article on the productions of the French ceramic artist Delaherche, which are much more noteworthy for artistic feeling than most work of this class turned out in France.

The *Artist* devotes an article and many illustrations to the beautiful and intellectual sculpture of Mr. Harry Bates, who may be called the modern successor of Flaxman. An article on "Toledo" under the head of "Sketching Grounds," and some account of the Musée Galliera at Paris, are among the rather mingled contents of the number.

The *Magazine of Art* includes an article by Mr. R. Phené Spiers on "The Development of Modern English Architecture." Anything that Mr. Spiers has to say on such a subject will be read with interest. The article is to a great extent based on a consideration of Nesfield's work, and of the progress towards a simplicity equivalent to "cutting out the adjectives" in literature.

Decorative Kunst deals largely this month with textile and paper designs, but we fear that the style of the designs illustrated is rather too much what it is the fashion to call "up-to-date," which generally means eccentric rather than really artistic.

In the *Antiquary* Mr. Haverfield continues his "Quarterly Notes on Roman Britain,"

* The object of these notes is to point out anything in the contents of the current magazines which is of special interest to our readers, with occasional brief criticisms on the views expressed in such articles. When a magazine which has been sent to us is not noticed, it is because that number contains nothing that it is within our province to comment upon.

* The *Studio* is published in the middle of the month.

and Miss Peacock her illustrated essay on "Domestic and other Mortars." Among the contents of this number are also engravings of two very curious ancient sculptured stones at St. Alkmund's Church, Duffield. We agree with the suggestion made, that they are probably symbols of two of the Evangelists.

The Revue des Deux Mondes contains an article by the well-known French art critic M. de la Sizeranne, on the question "La Photographie est-elle un art?" which may be of interest to those who aim at being artistic photographers.

The *Gazette des Beaux-Arts* includes a short article on William Morris, by M. Frantz, and one on Hadrian's Villa by M. Pierre Gusman.

Blackwood contains a well-written article under the title "The Story of St. Paul's." In regard to the decoration at present being carried on the writer remarks:—

"A more common criticism of the work than that there is incongruity in having such mosaic at all in St. Paul's, is the other that Sir William Richmond is designing it on too small a scale and in too grey a manner. That is how it strikes us. His carefully calculated methods in the roof seem to be too subtle to have full effect below the level, say, of the panels under the clerestory windows. Possibly Sir William Richmond himself feels this, for, as the work proceeds, there is an increasing breadth in the designs. The effect is being reached by simpler roads. This is partly due, no doubt, to a greater command of the material, some forty different tints of glass now doing the work that over 150 did at the beginning. The work now being executed in the quarter-domes is greatly freer, and cruder to the eye close to it, than any in the choir. There, it has to be remembered, the artist always had to contend with the necessity of conveying a sense of loftiness to the roof, which he has sought to do by the mossy effects in the domes. Then, again, in certain weather conditions one is weighted with the sense of an overloading of ornament. But, however, there may be differences of opinion about the work done, as there are differences of taste as to the manner in which it ought to be done, the promise it gives of a decorated interior removes a reproach against us of nearly two hundred years' standing in connexion with our National Cathedral."

The *Century* devotes a short article to the German painter Von Uhde, who has endeavoured to represent the incidents of the life of Christ in what would be a purely realistic aspect, but that his figures are not clad in the costume of ancient Jews. His work is very interesting and often very pathetic, but there is an intellectual contrariety about it, an impossible blending of the supernatural with everyday life, which it is impossible to get over.

The *Pall Mall Magazine* includes an illustrated article on Belvoir Castle.

The *Gentleman's Magazine* contains a review of "The Evolution of Telegraphy during the Victorian Era," by Mr. Charles Bright, and an article by Mr. Roger Ingpen on the fantastic French artist Callot.

The *Investors' Review* contains an article on "The Engineers' Strike; by an Employer," from which we quote the following pithy remark:—

"The engineering trade now is very different to the time when the writer served his apprenticeship some thirty years ago. Then bone and sinew played a large part in determining the amount of a day's work, which was ten hours. The hammer and chisel, the file and the ratchet-brace, faced and smoothed and drilled the different parts of the machines before they were put together. Now the mechanic has to stand before and attend to automatic planing, milling, and drilling machines, which have to a large extent superseded manual skill. The machines, not the men, now do the work. Therefore, when the men say they could do as much work in eight hours as they now do in nine, the masters know better, because if a machine is running at its proper speed and feed, it cannot produce so much in eight hours as in nine; and this is the eight hours' question in a nutshell, from the manufacturer's point of view."

We have received also the *Essex Review* (October quarter—it seems to come out very much after date), containing description and illustrations of Great Clacton Church (No. XX. of Essex churches); *Knowledge*, and the *Genealogical Magazine*.

COMPETITIONS.

CHURCH, ABERDEEN.—Nine local architects have been invited to lodge, before the end of January, competitive designs for a new Free Church at Beechgrove, Aberdeen, the church to accommodate 800 persons, and the hall in connexion 400, while the total cost of buildings is not to exceed 8,000*l*.

ARCHITECTURAL SOCIETIES.

ARCHITECTURAL ASSOCIATION: DISCUSSION SECTION.—The fourth meeting of the present session was held at 56, Great Marlborough-street, on the 1st inst., Mr. Matthew Garbutt, Chairman of the Section, occupying the chair. The paper of the evening was by Mr. A. R. Jemmett, on "The Possibilities of Examinations in Art." Mr. Jemmett said that when the Royal Institute of British Architects made their examinations compulsory many architects protested against them, on the grounds that it is impossible to examine in art, and that the examination in architecture, so-called, was of little use in making architects; to which supporters of the Institute replied that their examination did not pretend to be an examination in art, but an examination to test a man's knowledge of those things which it is essential an architect should be master of. This seemed to be accepted by every one, and the discussion had ceased. He thought it worth while to reconsider whether it is really a fact that a man cannot be examined in art. He quoted Viollet-le-Duc's definition that "art is an instinct, a craving of the mind, which, in order to express itself, employs various forms," and that "in order to live, art must be free in its outward expression, though strictly regulated as regards principles; it dies when its principle is disregarded and its expression enthralled." He then proceeded to argue that art being an expression of human feeling and the art of architecture a language whereby the artist expresses his ideas and sentiments, it must be possible to understand and to teach this language. It was evident the artist would not appeal to his contemporaries if he clothed his thoughts in the language of a Greek or a Moslem, or a thirteenth-century Frenchman. The artist should know the possibilities and limitations of expression of which his art was capable, and what ideas and emotions were most appropriate to his particular method of expression. During the last few centuries most buildings had failed to express any definite idea or sentiment whatever; artistic expression, where such was desired, was supposed to be obtained by the introduction of sculpture. We were apt to forget that though architecture appealed to the emotions, the process whereby we obtained a knowledge of the principles which produced great buildings was not an emotional process. He thought the Institute might examine more in reasons and principles than in facts; that they should ask, not so much what a great man did, as why he did it; that instead of laying stress on dates and features and mouldings, they should ask for analyses of design; that instead of asking students to draw actual examples, they should ask for a type of some particular style. His arguments, however, led him to the conclusion that to make such an examination possible there must be a large body of artists all agreed as to the principles of their art, and a high standard of art in the community at large. When such a time arrived an examination would hardly be necessary at all.—The discussion was opened by Mr. H. V. Lanchester, who thought that art began where a knowledge of the principles left off. The artist was not usually a reasoning animal; he might be able to say whether a building or a drawing was or was not a work of art, and yet be quite unable to say why. It did not necessarily follow that because a man knew the rules that had governed good designs he could produce a work of art; he might be quite unable to apply those principles in practice. He considered the Institute examinations not examinations in art at all.—The discussion was continued by Messrs. Crawfurth-Smith, H. A. Satchell, Brodie, Hopkins, and the Special Visitor, Mr. Reginald Blomfield. The latter pointed out that they could only examine in matters of absolute fact; it must be possible to put a question to which there was only one right answer. They could not examine in ideas and opinions. The only way to examine in art was to criticise actual pictures, sculpture, and buildings. He thought the idea of having an examination in principles of architecture a pernicious one. If every one must be taught to say the same thing in the same way the result would be the production of academical, lifeless architecture. The Institute Examination had been a great hindrance to the production of good architecture: it passed men out as capable architects whose study might have been wholly from books. There was no time now for the young man to study old work. Architecture was getting more slovenly every day It should be their object to train men to make experiments and to deal with the actual problems of life. Mr. E. S. Prior also attended the meeting and contributed some remarks to the discussion.—The next meeting of the Section will be held on the 15th inst., when Mr. A. W. Cleaver will read a paper on "An American Hospital: its Heating and Ventilation."—In our report of the last meeting we omitted to mention that the chair was taken by Mr. F. C. Eden.

ARCHITECTURAL SECTION, GLASGOW PHILOSOPHICAL SOCIETY.—A lecture by Mr. Francis H. Newbery, of the Glasgow School of Art, was delivered on the 29th ult. before the Architectural Section of the Philosophical Society, the subject being "The Sum of Tradition." Under this heading the lecturer dealt with the heritage in art, more especially as apparent in architecture that has been handed down to us. There were three ways of treating tradition:—(1) To ignore, which is impossible; (2) to blindly copy, which is foolishness; and (3) to rightly use, where alone is wisdom. To do this last was, in the first place, to thoroughly learn the lessons tradition taught. He insisted that tradition was not a fixed quantity, and that we ourselves by our works were daily adding to it. What was for our fathers could be for us, if it were found acceptable after proof, but we were free to ignore or accept according as the artist in us dictated. After all, much that was called original matter was in many cases merely assimilated material, and many great artists were such because of their wisdom, as shown in assimilation. It was a question of granting the man, and that done all the rest became possible. The lecturer ridiculed the idea that the teachings of tradition could be summed up in a code, and then taught as laws for the guidance of the student. Those who advised such impossibilities could neither be artists nor authorities, but outsiders incapable of producing a work of art themselves or of understanding its traditions. After speaking of the part that schools should play in this treatment of tradition, and mentioning that those alone who could produce a work of art could impart a right knowledge, the lecturer summed up by hoping that in the future the freest possible form of art education would be allowed. The student should be hindered in nothing, and should be allowed to attempt anything. What the student might have to do in after life, that he should attempt under the freest conditions while studying, for the student was from the beginning the artist, and the mature artist ever remained a student.

EDINBURGH ARCHITECTURAL SOCIETY.—A meeting of this Society was held on the 1st inst., Mr. J. A. Williamson, A.R.I.B.A., President, in the chair. Professor Baldwin Brown delivered a lecture, entitled "Notes on Some Edinburgh Buildings and Monuments." He began by explaining that his intention was to touch upon Edinburgh buildings, not from the historical point of view, but only as illustrating matters of general interest to those embracing the profession of architecture. The foremost question of the hour on the artistic side of architecture was that of the meaning and value of architectural styles in modern practice. Many of the younger members of the profession were repudiating the idea of being bound down in their work by the traditions of the past, and were claiming for the designer freedom to work out the solution of modern problems in a modern spirit. The past history of the art, however, showed that the "styles" had not fettered freedom, and that some of the best architects, as, for example, Wren and Playfair, cared comparatively little what forms they used so long as they obtained those effects of grouping at which they aimed. The truth was that architectural effect depended not so much on the forms themselves, but on the designer's sense of proportion in their combination. There was a distinct advantage in the use of well-understood established forms, because the eye was able to judge better of their relations without the attention being drawn off to the forms themselves. The present age had really its own architectural style, and a very good one, brought down from the Tuscan Renaissance and established here by Adam and Playfair. The fact that we had this tradition of style was, however, obscured by the numerous revivals of which the nineteenth century had been the scene. The lecturer discussed some of these revivals, "Gothic," "Classic," and "Scottish Baronial," in their effect on Edinburgh architecture, and urged architects, if they wished to

found a new style, to take the new materials which they used now, iron and steel, and to try and evolve from these materials suitable forms for their treatment.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—The prize offered by Mr. C. King, Chairman of the Plymouth, Devonport, and Stonehouse branch of the Devon and Exeter Architectural Society, to students of the branch for the best measured drawing of any architectural building, or part of a building, has been awarded to Mr. R. Sims Baker, of St. Blazey, Cornwall, and lately a pupil of Mr. B. Priestley Shires, A.R.I.B.A., of Plymouth, for his drawing of a part of Plympton St. Mary Church. Mr. H. E. Roskruge, a pupil of Mr. H. G. Luff, A.R.I.B.A., of Devonport, obtained second place for his drawing of part of Maker Church.

NORTHERN ARCHITECTURAL ASSOCIATION.—A meeting of the members of this Association was held recently at the Art Gallery, Newcastle, when a lecture on the "English Cathedrals," with limelight illustrations, was delivered by Mr. John Lane, of York. The President (Mr. F. W. Rich) was in the chair. Mr. Lane dealt largely with the picturesque features of the various cathedrals in England and Wales. Dealing with the outward effect of the cathedrals, he said many of them lost much by being built on a low level in the midst of large towns. Lincoln, on the other hand, stood on a hill, and was visible thirty miles across the fens. Along with St. Cuthbert's, at Durham, which looked down upon the Wear, it possessed a site which was unrivalled. A vote of thanks was afterwards moved by the President to Mr. John Lane for his lecture, and to Mr. Burleigh (Secretary of the York Association), who introduced Mr. Lane to the Newcastle Association. Mr. J. H. Morton seconded the vote of thanks, which was carried, and both gentlemen having responded, the meeting terminated.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring-gardens, Dr. Collins, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the Hackney Vestry 37,100*l.* for Jarrah and granite paving works; the Westminster Vestry 18,000*l.* for Karri and asphalte paving works; the Islington Vestry 3,050*l.* towards the cost of the Blackstock-road improvement and 14,250*l.* for electric lighting purposes; the Newington Vestry 3,190*l.* for sewer works; the Westminster Vestry 23,600*l.* for sewerage and paving works and street improvements; the Shoreditch Vestry 2,000*l.* for the construction of a store and workshops in Kingsland-road; and the St. Marylebone Guardians 36,540*l.* wherewith to purchase the freehold site of their workhouse.

Thames Conservancy.—The General Purposes Committee submitted correspondence between the Council and the Thames Conservancy Board with reference to the statement made by Mr. Idris at the Council on October 12 that the refuse of London was constantly taken up and down the river in leaky and rotten barges. The Board said that it was doubtless a fact that, in the tideway, refuse was carried on the river; but this was below Teddington, and much below the intakes of the London water supply. On the part of the river above Teddington there had been during the present year one case where it was reported that refuse of a foul character was being carried, and although it since appeared that the refuse was only ashes, immediate steps were taken for the removal of the barge before any harm could be done.

Mr. Beachcroft (Chairman of the Committee) pointed out that since the report had been drawn up a further letter had been received from the Board.

Mr. Thornton moved, and Mr. Payne seconded, that the matter be referred back to the Committee for further information.

The Committee agreed to take the matter back, and Mr. Thornton's proposal was withdrawn.

Taxation of Ground Values.—The report of the Local Government and Taxation Committee on ground values and new sources of revenue came up for discussion. The first proposal was "(a) That it is advisable that a new source of revenue should be obtained by means of some direct charge on owners."

Mr. H. P. Harris moved as an amendment: "That, with a view to the Royal Commission framing proposals for alterations in the law in the event of its coming to the conclusion that 'site values' do not contribute equitably to taxation, the recommendations of the Committee under Section A, viz., (a) to (i) of this report, be submitted to the Commission as suggestions for its consideration, and that there also be submitted to the Commission the report of the Statistical Officer bearing on the question whether and how far all kinds of property contribute equally to taxation, and the report of the valuer on the incidence of rates as between owners and occupiers."

Sir Harry Poland seconded, but after a long debate the amendment was rejected on a division by 53 against 50, and the recommendation was agreed to on another division by 55 against 47. The consideration of the remaining recommendations was postponed.

Proposed Theatre of Varieties, Holloway-road, Islington.—The Theatres and Music Halls Committee recommended, and it was agreed, (*a*) That the ten drawings, dated November 26, 1897, of the proposed theatre of varieties at the corner of Manor-gardens and Holloway-road, Islington, be approved, on condition that any alterations which may be found to be necessary to the transformer chamber be carried out to the satisfaction of the Council, and that the works be commenced within six months, and be completed in accordance with the Council's regulations and the provisions of the London Building Act, 1894.

Protection of London from Fire.—The Fire Brigade Committee reported as follows:—"We think it well to report for the information of the Council that soon after the present chief officer was appointed we instructed him to report his views on the subject of the means to be adopted for the better protection of London from fire. The Chief Officer has given his views in reports, dated September 29 and October 27, 1897, which we have been carefully considering, and we hope shortly to be able to report our conclusions to the Council."

The Works Department.—The report of the same Committee contained the following paragraph:—

"The Council on October 20, 1896, and April 6, 1897, authorised the execution by the Works department of some repairs, painting, and drainage work required at the Rotherhithe station, the architect's estimates, being respectively 490*l.* and 148*l.*, making a total of 638*l.* The revised estimate of the work amounts to 658*l.* 8*s.* 5*d.*, but we are glad to report that the actual cost has been 489*l.* 13*s.*, a saving of about 25 per cent. on the revised estimate. The manager of the Works department gives the following explanation of the saving:—'I attribute the greater part of this saving to the improvement in the organisation of the Works department, and the closer attention now given to detail in carrying out the work. Greater care is observed in collecting materials together before commencing the work, and advantage is taken of any circumstances by which a saving may be effected. In the present case the materials were collected in the yard and barged to the job instead of carting in small lots. We were able to save also by reason of having other work proceeding at the same time in the neighbourhood, and, further, were not interrupted by arrangements necessary for the convenience of the Fire Brigade, as is generally the case. There were other circumstances which helped to increase the saving, and which we cannot expect always to find in other works.'"

The Council adjourned at half-past seven.

THE SURVEYORS' INSTITUTION.

AN ordinary fortnightly meeting of this Institution was held on Monday evening, in the temporary premises of the Institution, Savoy-street, Victoria Embankment, the President, Mr. Christopher Oakley, occupying the chair.

Mr. F. Punchard read a paper entitled "The Amendments of the Agricultural Holdings Act suggested in the Report of the Royal Commission of Agriculture." The lecturer dealt with the proposed amendments seriatim, and in the course of his remarks he said there was a delightful vagueness in the Commissioners' use of the word "improving," as applied to roads and watercourses, a vagueness which would have to be qualified by the addition of provisions to the effect that such improvings must be of a durable nature, something beyond the mere putting into working order which would ordinarily fall upon the tenant, and not the necessary consequence of his failure to fulfil the covenants of his lease. He could readily imagine a claimant urging that he had improved a road by putting on a few cartloads of stones, or a watercourse by removing from it any gradual accretions of obstructive materials which were but the natural result of his failure to carry out his covenants. A specious advocate might also urge that as the landlord would under the amended Act be unable to recover compensation for the tenant's neglect, where such neglect had existed for more than two years, any amending of the roads or cleaning out of watercourses after that period would constitute an "improving" within the meaning of the Act. Such an argument would be likely enough to arise if the proposals of the non-content Commissioners were adopted, which would avoid any notice to the landlord, and would practically hand over to the tenant the control and management of the landlord's property. But fortunately the majority of the Commissioners recognise that the landlord ought still to have a controlling hand over any permanent outlay on his estate for which he is ultimately to be held responsible, and that he must not be converted into a mere rent-charger. Notice of these improvements would have to be given to the landlord, and details furnished as to the method in which they were intended to be executed. The want of such details had in some cases deprived tenants of their rights to compensation for drainage executed under the present Act. Tenants were very careless in this respect, and commonly ignored the provisions of the Act until the time had arrived for making their claims under it. The improvements proposed to be dealt with were, with the exception of roads and watercourses, of a class which would not often be executed, and the compensation for them, when measured by their value to the incoming tenant, would be slight and of little general moment. The benefits arising from the improving of roads and watercourses were more apparent and could be more readily estimated. We seemed to be drifting to the time when the tenant would maintain nothing but his right to compensation. In regard to the suggestion that the ordinary valuation between outgoing and incoming tenant should be dealt with by the same parties and under the same awards as claims under the Act, the lecturer said that it had been the double set of arbitrators and awards and the double set of costs that had made the Agricultural Holdings Act a dead letter in many districts. In regard to the Schedule of Dilapidations, it was proposed that "the dilapidations for which a landlord may claim compensation should be scheduled," and, so long as the schedule was as comprehensive for its part as the tenant's was, there need be no demur to its institution. The Commissioners gave no reason for this proposal, but their object appeared to be to check those extravagant and unsustainable counterclaims, which were freely stated to have been the chief cause of the boycotting of the Act. Much, of course, turned upon the interpretation given to the word "dilapidations." If, as was generally understood, it was to be applied to buildings, fences, gates, drains, watercourses, and the numerous other items usually named in a covenant to repair and maintain, there would not be many of the tenant's sins of omission excluded. It was assumed that if the schedule was adopted it would carry with it the right to compensation, whether there had been any written agreement upon the several headings or not. But one question which might arise was whether, where a written covenant to repair exists, any non-fulfilment of this covenant was to be treated as a dilapidation or as a breach of covenant. If it were treated as a breach of covenant the compensation for it could not, under an amendment subsequently proposed, be carried beyond two years, but there was no such limitation proposed in the provision as to the dilapidations. In this event let them by all means have a landlord's schedule of dilapidations. The lecturer subsequently dealt with penal rents and the limitation of landlord's claims.

Mr. Willis Bund proposed, and Mr. J. W. Kemsley seconded, a vote of thanks to the lecturer, which was supported by Messrs. F. J. Smith, John Shaw, Daniel Watney, and H. Donne.

On the motion of Mr. A. Buck the debate was adjourned until Monday, January 10.

THE AUCTIONEERS' INSTITUTE.

A PAPER on "The Practical Application of the Principles and Law of Dilapidations" was read on the 30th ult. at the Auctioneers' Institute, Chancery-lane, by Mr. Henry Bushell. The chair was occupied by Mr. J. F. Field, President of the Auctioneers' Institute. Mr. Bushell's paper drew attention, in the first place, to the distinction between actual dilapidations and the term dilapidated as applied to property used in a general sense, remarking that some of the less experienced members of the profession often made egregious mistakes in this direction, and considered anything a dilapidation which indicated want of repair, or decay. To schedule dilapidations efficiently the surveyor should carefully study the terms of the lease, as they largely determined what were dilapidations. At the earliest stage of negotiations for a lease it would be of advantage if a survey of the premises were made, and the condition noted on the lease. The age of the premises at commencement of a lease was also of great importance. It would usually be sufficient if the surveyor went on broad principles in determining to what extent the age and character of the premises would influence the extent of the dilapidations as well as their degree of quality. A person proposing to take an unfurnished house on lease would be prudent to engage a competent surveyor to inspect and report upon the condition of the premises, and the surveyor, if reporting for either party to a proposed lease, would do well to examine the premises. A covenant by a lessor to keep drains in good and tenantable repair had been ruled by Mr. Justice Wills not to extend to the rectification of a structural defect. General covenants to repair, and leave in repair, extended to all buildings erected during the term. Presuming the lease to have nearly expired, the next step was the all important one to both parties of the surveyor's examination of the premises to discover the dilapidations. The advantages of a joint survey to schedule dilapidations were considerable. Every schedule should carry an endorsement by the surveyor, which should be a guarantee of its accuracy; but when the respective valuations were so divergent as to render a settlement impossible it would be prudent for a third surveyor, or umpire, to settle the differences between them. On the subject of arbitrations, the lecturer noticed the advisability (under certain circumstances) of that mode of settlement of disputes concerning dilapidations. The lecturer next referred to the difficulty of determining the effect of covenants indicating the different degrees of repair, such as "tenantable repair," "good tenantable repair," "substantial repair," "habitable repair," and such phraseology. He added that it was well established that where a lessee covenanted to keep old premises in repair, he was not liable for such dilapidations as resulted from "the natural operation of time and the elements." The London County Council took out about 1,500 summonses in a year, the major portion of which were addressed to owners of property in respect to dangerous structures. But this summary method of procedure had received a salutary check by a decision of a Divisional Court. It was now generally accepted by the Courts that a vital principle in considering dilapidations was the condition and character of the premises at the commencement of the term. As to the question of rent claims, he was of opinion that, under certain circumstances, a claim in respect of rent as compensation during the execution of repairs was reasonable. A claim for a quarter's rent (75*l.*) was made and recovered, but it was only right to say that the dilapidations recovered amounted to nearly 700*l.*, and as the lessee did nothing in the matter, and vacated on the last day of the term, there was, of necessity, time lost during the execution of repairs. Sanitary matters, including drainage, continued to call for careful discernment on the part of the surveyor. It was not easy to state the present position of the law thereon concerning liabilities to repair, &c., but it appeared almost settled law that a lessee under a full repairing covenant would have to be wholly responsible for drainage and sanitary matters not chargeable to the Local Authority of the *locus in quo*.

The Student's Column.

QUANTITIES AND QUANTITY-TAKING.

CHAPTER XVIII.—EXAMPLE OF ABSTRACTING.

BELOW is given an example of "Abstracting," and for this purpose the dimensions previously given in the examples of "taking off" have been used as a basis. Whilst, of course, the comparatively small number of dimensions in these examples do not cover by any means the whole of the ground, they will be found sufficient to explain the system. The order of items generally can be taken from the chapters on "Modes of Measurement." Although owing to the exigencies of space the description of the item of sashes and frames has been contracted on the abstract it is advisable always to put the full descriptions upon the abstract, so that when the work has been "abstracted" and "checked" the dimensions may be put aside. This, although taking somewhat longer in the actual abstracting, will in the subsequent stage, *i.e.* "billing and checking," be found to save considerable time.

Each item as it is abstracted is crossed through with a vertical line, and again when checked. The latter being generally done in red ink, and the item on the abstract "ticked" in the same colour.

The deductions and making up on the abstract are also crossed through and ticked in the same manner.

In "making up" the brickwork it will be seen that one-third is taken off the item of "one brick," this is to reduce it to 1½ brick thickness, which is then added to the 1½ brick column.

EXCAVATOR AND BRICKLAYER.

(DESCRIPTION OF WORK.)

Sup.
Remove top-soil, 6 in. deep, wheel, fill, and cart away.

743.11
83 yards.

Cube.
Excavating to surface trenches, throw out, return, fill in, and ram around foundations.

1,440.3 Ddt. 66.4
617.3
1,506.7 332.1
1,006.3D 28.5 28.6
500.4 1,006.3
19 yards.

Do. and wheel, fill, and cart away.

617.3
332.1
28.5
28.6
1,006.3
37 yards.

Concrete (*as described*).

617.3
28.5
645.8
23½ yards.

Sup.
Brickwork in mortar.

1B	1½B
64.0	64.0
15.3	7.8
8.3	320.0
122.0	2.9
9.2	19.4
40.0	715.0
114.5	1,128.9
373.1	21.2D
81.0D	1,107.7
292.1	194.9
97.4(⅓rd)	1,302.4
194.9	4 rods.214ft.

Ddt.

1B	1½B
81.0	21.2

Half-brick wall in cement.

140.7

Rough cutting.
7.1

Damp-proof course
136.3
13.6
149.9

Run.
Labour to beam filling.
28.0

Rake out and point in cement to lead flashings.
22.6

Ditto to stepped flashings.
17.6

Nos.
Ends of timbers cut and pinned.
3

Extra labour, waste and cement to relieving arches. 1B by 1B
3 = 18.0
= 6ft.

Window frame bedded and pointed in cement and hair mortar, the sill bedded in white-lead.
3

Fixing blocks *c.c.* (*description*).
18

Facings.
Sup.
Red brick facing (*description*)

760.0
164.9
14.8
939.5
74.3
865.2

Ddt.
65.10
8.5
74.3

Extra over ordinary brickwork for red brick axed segmental arches (*description of pointing, &c*).
4.5
8.5
12.10

Run.
Fair raking cutting and waste in red brick facing.
49.0

Do. to skewbacks.
4.6

Fair circular cutting and waste in red brick facing.
12.0

9 in. × 4½ in. red brick on edge coping, set and pointed in cement, and double course of tile creasing in cement under, and cement fillet both sides.
38.6

Returned ends.
2

Mitre.
1 Apex mitre.
1 Mitres of raking with horizontal.
2

Nos.
Ends of sills made good to in facings.
6

(DESCRIPTION OF WORK.)

MASON.	TILER.	CARPENTER.							
Runs.	*Sup.*	*Run.*	*Cube.*	*Sup.*		*Run.*		*Nos.*
10×3 York stone, tooled, sunk, weathered, throated, and grooved sills.	Tiling (*description*).	Turning piece 4½ in. segmental soffit.	Fir in plates and lintels.	in. × in. battening for tiling		Splayed edge to roof boarding.	in.	Short drip in gutter, cross-rebated and rounded.
11.3	439.41 23.0	9.9	4.2 3.6 5.9	439.4	Ddt.	43.6	Do. cross-grain.	1
	462.4		13.5				89.6	
Short fair tooled ends, including stools for jambs.	*Run.* Extra to tile and half at verge.		Fir framed in floors.	in. rough boarding, edges shot to roofs.		Double splayed edge to 2 in. hips and ridge.		
6	36.9 Pointing to verge.		39.7 Do. in roofs.	439.4	Ddt.	45.9		
	19.3		37.10 20.3					
	Extra to hip tiles (*description.*)		58.1	in. rough sound boarding on in. × in. fillets nailed to joists (joists measured in.)		Tilting fillet.		
	22.9 Extra to valley tile (*description*).			249.9		82.9		
	22.0			1 in. gutter board and bearers.		2 × 2 double herring bone strutting to 9 in. joists.		
	Ridge tile.			20.3		27.9		
	23.0					in. × in. wrot splayed (*staff-beaded, moulded, or chamfered*) fascia to eaves.		
	Fair end.					28.0	I. M.	
	1 End cut to face of wall.						2 E.M.	
	1 Do. to slope of roof.						1 R.E.	
	1 Returned end at hip.						4	
	1							

(The description for the other trades will be given next week.)

We have received a letter from a correspondent in which he takes exception to the method given for measuring excavations as being rather redundant in figures. He cites as an example the following :—

8·54 3·3 3·6	970.8	Excavate to surface trenches, throw out return, fill in and ram around foundations.
8·54 3·3 1·6	416.0	Concrete and Deduct excavating as last and Add ditto and wheel, fill, and cart away.
8·54 1·11 9	122.8	Deduct excavating and return, fill, and ram and
8·54 1·2 1·3	124.5	Add ditto, and wheel, fill, and cart away.

and gives as an alternative the following :—

8·54 3·3 1·6	416.0	Excavate to surface, trenches and cart away, and Concrete.
8·54 3·3 2·0	554.8	Excavate to surface trenches, part return ; fill in and ram to foundations, remainder wheel and cart away.

This, as he rightly argues, gives exactly half the work, and he mentions in extenuation that "practical estimators know the usual proportions between earth 'carted away' and 'returned and rammed' to the footings of a wall." This sentence should, we think, be qualified by the addition of the word "*approximately*," as the proportions vary according to the thicknesses of the walls. The writer of these articles has endeavoured throughout the whole series to impress the student with the absolute necessity of sparing no trouble or time to get a *correct* bill of quantities, and the method given is the only one to arrive at this, with, of course, the exception of variation in form.

In the case of town work, where frequently the cost of "carting" and "shooting" is more than the digging itself, no other course should be followed. In those cases, however, where the surplus earth is merely deposited on the site (as is frequently the case in country work), the method he mentions could be adopted without injustice either to the contractor or the employer.

By taking the dimensions together, so that they can be cast before abstracting, the more correct method really takes very little more labour in proportion to the whole than the somewhat rougher method our correspondent suggests.

Correspondence.

To the Editor of THE BUILDER.

SURBITON MUNICIPAL BUILDINGS COMPETITION.

SIR,—I think that Messrs. Forsyth & Maule considerably over-rate the capability of their windows to light their building. The windows which they rely upon for their central hall, corridors, &c., certainly exist, but are quite inadequate, both because too remotely placed and too much overshadowed by projecting walls. As to the Council-chamber, it has, it is true, a single narrow window at one corner of each end, but close up to the light side of the room, and adding very little to the general lighting of it. The room, which is very wide and low, has practically only one outer wall. It is, therefore, substantially accurate, in a brief account, to describe this room as being lighted from one side, and the statement now put forth that it "has light on *three* sides" is little better than a quibble. THE WRITER OF THE ARTICLE.

POROSITY OF ROOFING TILES.

SIR,—I was recently asked by a friend to examine for him some specimens of roof tiles with respect to the amount of water which they would respectively take up. The results obtained varied within rather wide limits, and as it did not appear that anything was generally known in regard to the matter beyond the fact that one tile is more porous and will absorb more water than another, I send you the following quantitative results, which may possibly be of interest to your readers.

The fourteen tiles examined, of good quality, and varying in colour from light red to brown, were dried in an oven, allowed to cool, weighed, immersed separately in water for fifteen minutes, then wiped carefully, and quickly weighed again.

Description of tile.	Gain per cent.
Excelsior A	2·03
„ B	2·4
„ C	2·03
Broseley	6·7
Coalport A	2·8
„ B	2·7
„ C	1·4
Ruabon A	·18
„ B	·23
„ C	2·01
Doughty	6·3
Colebrooke	5·2
Unmarked Dark	1·4
„ Light	2·7

The weight of water absorbed by a tile weighing 2 lb. some ounces varied from 30 gr. to over 2 oz.

I ought to say that only one tile of each sort was at my disposal, so that the above results can make no claim to represent the average absorptive capacity of the different descriptions indicated.

As a rule, the tiles of a fine light red colour absorbed much more water than those of a darker shade. R. T. PLIMPTON.

Middlesex Hospital Chemical Laboratory,

APPOINTMENTS.

HEREFORD.—Mr. Thomas L. Miller, consulting engineer, Liverpool, has been appointed to advise the Hereford City Council on their electric lighting scheme.

SURVEYORSHIP APPOINTMENT.—Mr. A. Bowes, A.M.Inst.C.E., of the Borough Engineer's office, Salford, has been appointed Surveyor to the Urban District of Newton-in-Makerfield.

APPOINTMENT.—Mr. Percy Nevill has been appointed chief engineer to the Isle of Man Harbour Board.

OBITUARY.

MR. OCTAVIUS HANSARD.—Every habitué of the Institute of Architects' meetings will feel the greatest regret at the sudden death of Mr. Octavius Hansard, who was killed on the Metropolitan Railway on Friday last week. Mr. Hansard was for many years one of the most familiar figures at the Institute meetings, and took a great deal of interest in its affairs; and it may be said of him that he was everybody's friend, and will be regretted by all who knew him. Mr. Hansard's practice as an architect was not we believe large; he was probably not dependent on it; but although the part he took at the Institute meetings was generally in connexion with practical and professional matters, this was not from want of interest in the artistic side of architecture; and those who knew him only in connexion with discussion on matters of professional practice might have been surprised to learn that he was a very accomplished water-colour artist. His funeral was announced to take place on Thursday this week, and probably a large number of his old friends at the Institute were present on the occasion, but of this we are not able of course to give any report in this issue.

MR. W. S. CROSS.—We regret to announce the death of Mr. Cross, architect and rating surveyor, of the Outer Temple, Strand, on the 1st inst., aged seventy-four years. Mr. Cross was for some years Surveyor to the Sun Fire Office, and subsequently acted for the Duke of Bedford's London estates. He was a Fellow of the Institute of Architects, and one of the oldest members of the Surveyor's Institution, having joined as a Fellow in the year 1873. He had a large private practice, and among his public buildings may be mentioned the Strand Union Workhouse at Edmonton, Camberwell Infirmary, and Casual Wards and Receiving Workhouse at Bear-yard, Long Acre, in addition to numerous private residences, warehouses, &c. As a rating surveyor he acted for the Strand Union, St. George's Union, and various other parishes and vestries, and was in latter years engaged in most of the large and important appeal cases.

MR. F. R. MASSEY.—The death has just occurred, in his eighty-sixth year, of Mr. Frederick Henry Massey, engineer. In early life Mr. Massey was associated with the Marseilles engineers in transforming the Bay of Toulon into a harbour. Subsequently he entered the service of the Russian Government, and from his plans, and under his personal supervision, large shipbuilding and engine works were established at Odessa and Sevastopol. At the opening of the Suez Canal Mr. Massey, who held the rank of captain, renewed his acquaintance with M. de Lesseps. He retired from the Russian service in 1872.—*Times.*

GENERAL BUILDING NEWS.

CHURCH, STRETTON, NEAR BURTON-ON-TRENT.—On the 24th ult. the Bishop of Lichfield consecrated a new church which has just been erected at Stretton, Burton-on-Trent, at a cost of over 30,000*l.* The building is cruciform in plan, and has a central tower rising immediately over the choir. Stanton stone is used externally, but the interior walls are of Runcorn stone. The flooring consists of stone quarries and wooden blocks. A high screen separates the chancel and the south chapel from the nave. It is surmounted by a cross which, together with the choir stalls and other work hereabouts, and the organ case and the pulpit, has been carried out by Mr. J. E. Knox, of Kennington. The chancel is laid with black and white marble. The roof is decorated with representations of angels playing upon instruments. The roof of the nave is light in colour, and in keeping with the rest of the building. For the whole of this Mr. Charles Powell, of London, has been responsible. The only stained-glass window at present in the church is at the east end, and is the work of Sir William Richmond, having been executed at a cost of 1,000*l.* The subject symbolises our Lord in His Majesty. There is no reredos proper, but a low enrichment of marble and alabaster is situated immediately behind the altar. The church is lighted with hanging lamps, and the heating apparatus is so arranged that it cannot be observed by the public. The entrance doors are of teak. The font is raised on three circular steps of Frostley marble. The canopy is of carved oak, and contains in recesses eight sacred effigies. At the entrance to the churchyard is a lych-gate. The church will accommodate, with pews and chairs, 400 people. The building has been erected by Mr. Halliday, of Stamford, from the designs of Mr. J. T. Micklethwaite.—*Birmingham Post.*

ORGAN CHAMBER, WESLEYAN CHAPEL, ST. DAY CORNWALL.—The work of building an organ chamber, &c., at St. Day Wesleyan Chapel has been carried out by Messrs. Moyle (Chacewater), and Gray (Redruth), from plans prepared by Mr. S. Hill, architect, Redruth.

METHODIST CHAPEL, BURNLEY.—The memorial stones were laid recently of the new chapel which is being erected by the United Methodist Free Church connexion. The chapel will seat 675 persons. In addition to the present school the new chapel will contain two vestries and six class-rooms for the use of the scholars, whilst in the basement a heating cellar, a kitchen, and a store-room are to be provided. Mr. G. E. Balshaw, of Southport, is the architect, the builder's work has been entrusted to Messrs. A. & R. Parker, and contracts have also been let to the following:—Joinery, Messrs. R. Dean & Sons; slating, Messrs. Stanworth & Sons; painting and plastering, Mr. Smith; and plumbing, Mr. Roberts. It is expected that the cost of the chapel will be about 3,400*l.*

GRESHAM BAPTIST CHAPEL, BRIXTON.—This chapel, which was destroyed by fire nearly two years ago, has been rebuilt, with elevations to Gresham and Barrington-roads, faced with yellow malm bricks and Portland stone dressings. The chapel is on the ground floor level, and the school-room above the chapel in the centre of the building, and lighted from the clearstory, and with class and other rooms on each side. Messrs. Whitehead & Co., of Clapham-road, are the contractors for the general works; Stuart's Granolithic Co., for the fire-resisting floors, which have been covered with wood blocks by the Westminster Flooring Co.; and Messrs. Ward & Co., for the staircases; The Educational Supply Association have executed the seating to both school-room and chapel in pitch pine, and the gas arrangements are by Messrs. Sugg & Co.; the organ is by Messrs. Samuel Twyford. The total cost has been about 5,000*l.* The architect is Mr. J. William Stevens, of London.

BOARD SCHOOL, STAPLEFORD, NOTTINGHAMSHIRE.—A new Board school for boys has just been opened at Stapleford. The school is situated in Dog Kennel-lane, and has been in course of erection about twelve months. The building was designed by Mr. W. H. Higginbottom, architect, of Nottingham. The main entrance leads direct into the central hall, which is 61 ft. long and 25 ft. wide. Additional entrances and exits are also provided at the opposite end of the building. The class-rooms, six in number, are arranged four on one side and two on the other, each being 25 ft. by 24 ft., and accommodating sixty scholars. The building is so planned that two class-rooms may be added at a future time. Part of the floor in each class-room is made sloping. Cloak-rooms, with lavatories, are provided at each end of the hall. The master's room is arranged over the back cloak-room, and has immediate access to the balcony. The floors of the central hall and class-rooms are of wood blocks, and the floors of the cloak-rooms and corridors are of asphalte. The whole of the internal walls of the hall, class-rooms, and cloak-rooms have a glazed brick dado, 4 ft. 6 in. high, above which the walls are colour-washed. The heating is by means of low pressure hot-water pipes. The building externally is faced with red bricks, with stone dressing, and the roof is covered with slates. The school has a large play-ground, which is asphalted, and there is a covered play-shed in the yard. The work has been carried out at a cost of about 3,000*l.*, and the contractors were Mr. Charles Moult (bricklayer, &c.), Messrs. Pacey & Henson (joiners), Mr. E. Fisher (painter), all of Stapleford; and Mr. H. Shardlow (plumber), of Hyson Green.

HIGH SCHOOL FOR GIRLS, MONMOUTH.—On the 25th ult. the Marchioness of Worcester opened the High School for Girls at Monmouth. The building is from the designs of Mr. W. Stock, Architect to the Haberdashers' Company (the trustees of the William Jones' Charity, out of the proceeds of which the school has been erected), the contractors being Messrs. Gradwell & Co., Barrow-in-Furness. The frontage of the building faces the south, and is marked by five gables, the centre containing a carved panel of the arms of the Haberdashers and of William Jones, the founder. The main block has three floors, containing numerous class-rooms, in addition to the quarters of the head mistress and the staff; and to the north, at right angles to the main building, is a hall, 70 ft. by 30 ft. To the rear are the servants' quarters, kitchens, and dining-hall. The buildings are built of local red sandstone, with Bath stone dressings, and the staircases and corridors are of stone, and fire-proof. Accommodation is provided for 100 day scholars and fifty boarders.

NEW SCIENCE SCHOOL BUILDINGS, WOLVERHAMPTON.—On the 2nd inst. Mr. F. E. Kitchener (Chairman of the Technical Instruction Committee of the Staffordshire County Council) opened the new science buildings which have recently been erected on the grounds of the Wolverhampton Grammar School. The total estimated cost of the new structure is 2,000*l.* The building is of two stories, and the accommodation includes a lecture-room, a preparation-room, a store-room, and a balance-room, on the ground-floor; and on the first floor are a chemical laboratory and a physical laboratory, the former for teaching practical chemistry or metallurgy, and the latter for practical instruction in physics. Mr. H. Willcock was the builder, and Mr. G. H. Stanger the architect.

HOSPITAL BUILDINGS, BURNLEY.—These buildings are being erected at Kibble Bank, Lane Head. The fever pavilion is already roofed. The plans have been prepared by Mr. F. S. Button, and are being carried out under the supervision of Mr. Wm. Foden, clerk of works to the Joint Hospital Board.

NEW EMPIRE MUSIC-HALL, NOTTINGHAM.—The building operations in connexion with the new Empire Music Hall, Sherwood-street, Nottingham, are approaching completion. The proscenium opening is 29 ft. square, and the height from stage floor to grid is 48 ft. There is also a cellar 16 ft. deep. All the staircases and the dressing-rooms are to be fireproof, and the hall will be heated by hot-water pipes. With reference to the seating accommodation, there are to be fauteuils, two circles, and pit and gallery. The latter is to accommodate over 700 persons, the pit over 600, the upper circle some 400, and the dress circle about 220, whilst nearly eighty seats will be provided by the fauteuils. The architect is Mr. Frank Matcham; the clerk of the works is Mr. Chas. Greenman; the contractors for ironwork and the construction of the roof are Messrs. Whitworth & Co., of London. Messrs. Longden & Co., of Sheffield, are the contractors for the building; Messrs. Danks & Co., of Nottingham, supplied the gas-fittings, and Messrs. Blackburn, of Nottingham, have the contract for the electric lighting.

PROPOSED ALTERATIONS, ROYAL OPERA HOUSE, ST. LEONARDS.—The plans of the proposed alterations to the Royal Opera House, St. Leonards, prepared by Mr. John P. Briggs, Strand, were submitted and passed by the Hastings Town Council on the 19th ult.

NURSES' HOME, PAISLEY.—Princess Louise visited Paisley a few days ago for the purpose of opening the Brough Nurses' Home. The building, which is at Oakshawhead, is four stories in height, and is constructed of red sandstone from Lockerbriggs Quarry, Dumfriesshire, the style being Scottish Domestic. The principal feature of the frontage consists of a tower, which rises considerably higher than the main building, and in the base of which the entrance has been formed. On the right side of the hall leading from the entrance is an office, and on the other side are the matron's sitting-room and drawing-room, the dining-room being at the end. A collapsible partition divides these latter rooms. Six bedrooms are on the flat above, and accommodation for three nurses is provided on the highest landing, together with a sick-room and a servants' bedroom. There are bath-rooms on each floor. Owing to the slope of the ground there is an extra depth on the north side, and here in the basement are the kitchen, offices, district and cloak rooms, and several stores. The architect is Mr. T. Graham Abercrombie, Paisley.

GREENOCK—PROPOSED NEW HALL.—Plans of a new suite of halls for the Gaelic Parish Church have been prepared by Mr. J. B. Stewart, architect. They show a frontage to West Stewart-street on the site of the present hall, adjoining the church. The large hall will accommodate about 200 persons, besides a class-room providing accommodation for another 100.

CO-OPERATIVE PREMISES FOR MIDDLESBROUGH.—A special general meeting of the members of the Middlesbrough Co-operative Society, Limited, was held in the Co-operative Hall recently, when resolutions approving the architect's plans of the proposed new premises in Corporation-road, and to empower the Executive to expend the requisite amount of money for their erection, were passed. The plans, specifications, &c., have been designed by Mr. Moore, architect, and the building is to be erected by Messrs. Hudson Bros., Middlesbrough.

TOWN HALL, BALDOCK.—This building has just been opened. The hall, which faces an open space where the chief streets converge, has been built at a cost of about 2,000*l.* It is of brick, with a tiled roof of high pitch, and has a small square tower on the north-east. On the ground floor are the offices for the Council, a fire-engine house, and the chief part of the caretaker's rooms. The first floor mainly consists of the assembly-room, which has a floor space 40 ft. long by 31 ft. 6 in. wide, a permanent platform being at one end and a small gallery over the cloak-room and landing on the other. The assembly-room will seat about 400 people. Externally the lower story is of red brick, while the upper is rough cast, except at the corners; at these the red brick is carried up to the eaves. The Council approved of the designs submitted in an open competition by Mr. Talbot Brown, of the firm of Messrs. Talbot Brown & Fisher, architects, Wellingborough; and they accepted the tender of Messrs. J. & S. Redhouse, of Stotfold.

NEW BUILDINGS IN ABERDEEN.—The Established Church of Scotland are to erect a church in Midstocket-road, and have appointed Mr. W. Kelly, architect, Aberdeen, to prepare plans. Practical steps are also being taken to erect a church at Torry.—The War Office have instructed Messrs. D. Macandrew & Co., Aberdeen, to build a drill shed (of granite with wood block flooring) at the Military Barracks, Castlehill.—An additional story is to be placed on the purifier house at Aberdeen gasworks, at a cost of 3,200*l.*—The Corporation Lodging House at present in course of erection is to be

lighted by electricity.—In accordance with directions from the Scotch Education Department, Aberdeen School Board are to proceed at once with the erection of a new Board school at Hanover-street. The school will be three stories high, and will accommodate over 900 standard scholars and infants. Mr. Arthur Clyne, Aberdeen, is architect.

THE MASSON HALL, EDINBURGH.—For several months past additions and alterations have been in progress at 31, George-square, Edinburgh, to provide a residence for lady students and "a union" for all the ladies attending the University. These have now been completed, and the Masson Hall, as it has been called, was recently opened. The present scheme gives accommodation for fifteen resident students. On the under flat, or basement, a portion of the garden ground to the south has been utilised to build a large dining-hall and kitchen and necessary offices. Dressing-rooms for the outside students and servants' accommodation have also been provided at the same level. On the street level is the library, which has been named the "Ffeiffer Room," and adjoining it is the committee-room. The flat roof of the dining-hall and kitchen is on a level with the library windows, one of which opens upon it, and this in summer will constitute for the students a balcony. The first, second, and third flats are reserved for the residents. Right over the library and facing the south is the drawing-room for the residents. The rest of this floor has been taken up with bedrooms, and to that purpose the two upper flats have also been devoted. Several of the larger rooms have been divided, giving each student the privacy of a separate apartment. The house is heated by means of open fires and radiators, the latter supplied by heat from a furnace in the basement. Externally, the building has been increased in height by an additional story. The architect was Mr. James Jerdan.

POST-OFFICE, WORTHING.—A new post-office at Worthing is to be erected at the corner of Market-street and Chapel-road. The building, of which Mr. R. S. Hyde is the architect, is to be of three stories, with a frontage of 50 ft. to Chapel-road and a return frontage of 100 ft. to Market-street, the public entrance being at the corner; and the accommodation to be provided will include a sorting office measuring 50 ft. by 47 ft., and an instrument room 28 ft. by 20 ft. The public side of the counter measures 37 ft. by 11 ft.

PROPOSED TEMPERANCE HOTEL, DUNDEE.—Plans have been prepared by Mr. R. Hunter, architect, of a new temperance hotel for Dundee. The building will be five stories in height, with attics. The frontage to Whitehall-crescent, South Union-street, and Dock-street is about 300 ft. The main entrance, situated immediately opposite the West Station, terminates in a tower, bow windows being carried up as high as the third story.

THE NATIONAL GALLERY OF BRITISH ART.—It is stated that Mr. Tate has given instructions to the builders (Messrs. Higgs & Hill) to at once proceed with the work of completing the Gallery of British Art according to the original design of the architect (Mr. R. J. Sidney Smith). This work, which will take about eighteen months to complete, will more than double the size of the existing building, and give much more space for picture hanging, in addition to which two large rooms will be devoted to sculpture.

DRAPERY PREMISES, STRATFORD.—New premises have been erected in the Broadway, Stratford, E., for Mr. George H. Leavey, of Chatham, Maidstone, Woolwich, and Bromley. The architect of these was Mr. George E. Bond, of Rochester.

BRISTOL DISPENSARY: BEDMINSTER BRANCH.—This new building is situated in Malago-road, Mill-lane, and is of brick with Bath stone dressings. The ground floor is wholly occupied with the necessary rooms for the dispensing work, and above are rooms in which the dispenser will live. The work was executed by Mr. George Humphreys, according to plans by Mr. W. V. Gough.

SANITARY AND ENGINEERING NEWS.

WATER SCHEME, EVESHAM VILLAGES, WORCESTERSHIRE.—On the 25th ult. water-supply works for parishes in the Evesham and Pebworth districts were opened. The scheme provides for a constant supply at high pressure to the villages of Bretforton, Church Honeybourne, Cleeve Prior, North and Middle Littleton, Sedgeberrow, and South Littleton, in the Evesham Rural District in Worcestershire, and Aston Somerville, Cow Honeybourne, Hinton, Pebworth, and Broad Marston, in the Pebworth Rural District in the county of Gloucester; and provision is made to augment the existing supply to Broadway to the extent of a maximum quantity of 10,000 gallons per day when required. The population to be supplied is 3,148, the number of houses 726, the area is 15,143 acres, and the rateable value 22,365*l.* The springs are collected by means of headings driven into the hill, at depths varying from 6 ft. to 26 ft., and the water is conveyed by stoneware collecting-pipes to two collecting chambers. From these the water is conveyed by means of a 4 in. iron pipe to the principal service reservoir at Broadway, which is constructed of concrete, and is 30 ft. by 30 ft., having a depth of 9 ft. of water, and contains 50,000 gallons. There are two other reservoirs, one at Pebworth and one at Littleton. Both of these are at the extreme ends of the works, and are provided for the purpose of acting as compensating reservoirs, and ensuring an adequate supply to more distant villages. The distance from Broadway reservoir to Pebworth reservoir along the main is ten miles, and to Littleton reservoir eight miles. The Pebworth reservoir has a capacity of 20,000 gallons, and the Littleton reservoir of 15,000 gallons. The works have been carried out by Mr. Thomas Vale, of Stourport, whose contract was for 6,190*l.* The iron pipes were supplied by Messrs. J. & S Roberts, of West Bromwich, whose contract amounted to 6,062*l.* The valves and fittings were supplied by Messrs. Blakeborough & Co., of Brighouse, Yorkshire. The resident engineer (Mr. Henry C. Adams) has superintended the works throughout. The engineer of the scheme was Mr. J. E. Willcox, of Birmingham.

SANITATION IN SILESIA.—The Prince of Pless has commissioned Mr. Albert Wollheim, of London, to take in hand a scheme for the sewerage of his large estates in Silesia.

GLASGOW MAIN DRAINAGE.—Mr. John Whyte (Master of Works), Mr. A. B. Macdonald (City Engineer), and Mr. W. Santo Crimp (Consulting Engineer) have presented a memorandum regarding the suggested scheme for disposing of the sewage of the municipal area on the south bank of the river.

BRIGHTON WATER SUPPLY.—The Brighton Town Council resolved, on the 2nd inst., to buy up the Aldrington Estate Water Company, which supplies an area just westward of the borough. This is the second company the Corporation has bought this year, the other being the Shoreham Waterworks Company.

ROSCREA WATERWORKS, IRELAND.—These works have just been completed. The supply is drawn from St. Patrick's Wells. The engineers were Messrs. Ryan & Hickson, Dublin, and the contractor Mr. Maher, J.P., Roscrea.

MIDLAND RAILWAY EXTENSIONS: BRADFORD.—A recent issue of the *Leeds Mercury* contains some details of the proposed extensions of the Midland Railway in Yorkshire. In regard to Bradford, a line will enter the city at a point on the north side of the new Fever Hospital at Bierley, and the whole of the distance, some two miles or so, will be tunnelling. Once inside the city boundary, the new line will proceed in the direction of Rooley-lane, and at that point will be no less than 299 ft. below the level of the ground. Thence it proceeds under Bowling Park at about the same depth, under Park Drive and the houses near Ripley's Dyeworks, striking the thickly populated parts of the city after going beneath the Ripley siding. The line will take the direction of Sloane-street, Ellen-street, under the Great Northern Railway from Leeds to Low Moor, and the same Company's line from Leeds to Bradford. Meanwhile, the depth from the surface will gradually diminish, until, at Ellen-street, it will be 107 ft., and under the Leeds and Bradford line 74 ft. The tunnel will run parallel to Rolling-street for a considerable way, beginning to divert only when Broom-street has been reached. It will then pass under Wakefield-road, Dryden-street, Fredrick-street, and George-street, leaving the latter street at the corner of Ebenezer-street, and coming out at the junction of Leeds-road and Vicar-lane. So far the tunnel will be at such a depth, varying from 103 ft. to 60 ft., as not to render it necessary to interfere with the buildings on the top; but from the corner of Vicar-lane to the present Midland station in Forster-square, the tunnel will, according to the plans, be precariously near the surface. The line is shown to take the direction of Bentley-street, under the old police-station in Colliergate, Swaine-street, and as entering Forster-square. Now, from Vicar-lane to Forster-square the buildings are huge warehouses of from six to eight stories high, and as the depth of the tunnel from the surface is shown at only 19 ft. at the corner of Vicar-lane, 17 ft. 10 in. in Bentley-street, 15 ft. in Hall Ings, 13 ft. 1 in. in Brown-street, 12 ft. 7 in. in Ship-alley, and 13·1 in Forster-square, it does seem necessary, although there is no official information on the point, to incur great expense in the purchasing of valuable warehouse property, which will have to come down. The plans show that Forster-square is to be raised to the extent of 3 ft. 6 in., but that is a matter on which the Corporation and the Company's engineers are not yet agreed, but concerning which there will be no difficulty eventually. Swaine-street, at the point under which the tunnel passes, is to be raised 3 ft. 6 in.; Brown-street is to be stopped, and so is Ship-alley. The *Argus* offices will have to come down, and just about there a junction in the new line will be made, the passenger one keeping to the left of Oastler's Monument, and entering the present station, whilst the goods line will take to the right of the Monumeat and enter the present goods depot. It will be necessary to move the Monument and find it a new abiding place, either in the centre of the city, or in one of the public parks. The Bradford Beck, which runs through Forster-square, was regarded as one of the great difficulties of the engineers, but that has been got over by diverting its course. It will be taken just before crossing the route of the proposed line in Forster-square, and passed in the direction of the station under the permanent way between Platforms 4 and 5, until it has reached beyond School-street. Then it is taken almost at right angles under the Company's property to Leeming-street, and will resume its present course at a point near to the Mill-lane Gasworks. The line within Bradford itself is just over two miles in length, and the book of reference contains the names of the owners of no less than 455 lots of property to be consulted, provided powers be obtained.

PROPOSED NEW PIER AT ROCK FERRY.—Mr. Charles Brownridge, Borough Engineer, Birkenhead, has submitted the following report to the Ferry Committee of the Corporation in regard to the new pier, bridge, and stage proposed to be erected at Rock Ferry:—The proposed pier is to be constructed on the northerly side of the existing stone slip, immediately adjoining it at the shore end, and being about 26 ft. 6 in. from it at the outer or river end. The pier for a length of about 27 ft. at the shore end is proposed to be constructed solid of masonry and concrete, and then continued in iron supported on cast columns for a distance of 791 ft. 6 in. from the river wall. It is provided with a shelter 16 ft. long in the middle, and a further shelter at the end or bridge-head 16 ft. long. The floor is of redwood 52 5 ft. above ordnance datum, and there is a rail barrier down the centre dividing the pier into two widths. The bridge is 160 ft. long and 10 ft. 6 in. wide. It is hinged to the pier at its upper end, and at the lower end rests directly on the stage, and has an elm floor. The stage is 150 ft. long and 32 ft. wide, carried on ten floating pontoons, of which the two end ones are made V shaped to act as cutwaters, and the four centre ones are lengthened under the bridge so as to give additional buoyancy and steadiness. It is proposed to moor the stage in such a position that at low water the outer face will not be less than 50 ft. from the end of the old slip, by two breast moorings, each 40 fathoms, two end moorings, each 70 fathoms, and two river face moorings, each 50 fathoms long. The estimated cost of the works is the same as that included in the Parliamentary estimate, viz., 15,000*l.*

ELECTRIC LIGHTING NEWS.

ST. HELENS.—The St. Helens Parliamentary Committee have resolved that the powers for the construction of tramways to be applied for, be amended as follows:—The proposed tramway to Whiston to be extended to Rainhill; the tramway to Sutton to be extended to St. Helens Junction; the terminus of the proposed tramway at Parr to be the junction of Newton-road with Derbyshire Hill-road; the terminus of the proposed tramway at Haydock, to be the junction of Church-road with Kenyon's-lane; the terminus of the proposed tramway to City Windle, to be the junction of Hard-lane with Moss Bank-road; that application be made for power to lay tramways to the depot at Boundary-road, and to the depot at Parr. At a meeting of the Tramways Sub-Committee, Dr. Hopkinson submitted a report as to the introduction of electric traction. It was resolved that for the purpose of the generating-station the Boundary-road site be adopted, and the generating plant erected there, the steam to be supplied from the refuse destructor, also proposed to be erected on the said site; that on this assumption Dr. Hopkinson be requested to prepare a specification for the erection of the station, and for the system of overhead conductors. The Local Government Board have sanctioned the borrowing by the Corporation of 16,500*l.* for electric light extension in the borough.

LLANDUDNO.—Mr. F. H. Tulloch, M.Inst.C.E., recently held an inquiry at Llandudno, on behalf of the Local Government Board, into an application by the Llandudno Urban District Council for powers to borrow a sum of 25,000*l.* for the erection of electric lighting works and the provision of a refuse destructor. Mr. A. H. Preece, the engineer, explained the details of the electric lighting works, which it was intended to erect near the present gasworks. There would be two engines and dynamos, of 250 horse-power each, and also a large reserve battery, sufficient to supply the requirements of the town in case of any failure in the ordinary plant. The system to be adopted in the town was the three-wire system, and the scheme had been approved of by the Board of Trade. Mr. Preece also explained the manner in which feeders might be provided. It was proposed to place thirty arc lights on the promenade, extending as far as Penrhyn Crossing, and twenty other arc lights in Mostyn-street and the streets crossing thence to the promenade, making fifty in all, each of 1,200 candle-power. The electric lighting portion of the scheme would cost 15,300*l.*, and 1,000*l.* had been allowed for contingencies. Mr. Stephenson, the Council's engineer, explained the plans of the destructor, which would consume about fifteen tons of refuse in twenty-four hours, the present average being about thirty tons per day. The estimate for the erection of this portion of the works was 8,591*l.*

FOREIGN.

FRANCE.—The President has just officially opened the new Hôpital Boucicaut, which occupies a site 30,000 square mètres between the Rue de la Convention, Rue Lourmel, Rue Cévennes, and Rue Lacordaire. The hospital consists of eight pavilions constructed in brick and iron, and planned and built

on the most approved sanitary principles. It stands in the midst of a large garden. The total cost has been 3,700,000 francs. The President took the occasion to confer the cross of the Legion of Honour on the architect, M. Legros.——It is proposed to demolish the old buildings of the Hôtel Dieu which are still in existence, and to replace them by modern buildings. The scheme is to comprise also (and we hear it with some alarm) the "restoration" of the church of St. Julien le Pauvre. —— A fine retable in gilt copper and enamel has been added to the collection at the Cluny Museum, with a design representing the scene of the Feast of Pentecost. It had been preserved for a long time in the sacristy of the Abbey of St. Denis, and appears to be a specimen of German art of the twelfth century.——An interesting exhibition of etchings by Waltner is open at the Goupil gallery in the Boulevard des Capucines.——It is proposed to rebuild the Mairie of the eighth arrondissement in the Rue Faubourg St. Honoré.——The Municipal Council of Paris has decided to form a new square on Montmartre, on the ground below the front of the Church of the Sacré Cœur, at an estimated cost of 800,000 francs.——The "Association Provinciale des Architects Français" has founded an annual competition for a gold medal and a travelling studentship. The first programme, for 1898, is "A notary's house in an important rural district." ——The Cathedral of Laon is being opened out by the removal of various mean buildings which have grown up around it during the last century. ——Some curious frescoes have been discovered in the church of St. Clement, near Lunéville, on the walls and the vaulting, and hitherto hidden under a coating of plaster. They date from the fifteenth century, and are attributed to the Strasburg painters employed by René II. of Lorraine. They represent the Nativity, the martyrdom of St. Sebastian, the Crucifixion, and various legendary subjects.——It is proposed to construct on the shores of the lake of Thau (Hérault) a great foundry establishment of the same kind as that of Creusot, which will be one of the most important in France, and will employ 5,000 hands.——The Municipal Council of Oran has decided on the erection of a theatre. ——The new Cathedral at Tunis is to be inaugurated on Christmas day. It is built of Tunisian marble, in Romanesque style, and is not yet quite completed, the towers not yet having been carried up their full height.

GERMANY.—There is a considerable demand in South Germany at present for cheap photographs of the principal national collections, and Messrs. Bruckmann have commenced publishing a series dealing with the Munich galleries, which are considerably superior to the cheap photographs so often met with.——The Oranien Bridge at Berlin is to be rebuilt. This is one of the last bridges that will have to be reconstructed under the great scheme of canal and river regulations which has been undertaken at Berlin.——Professor Hermann Prell has just received a commission from the Emperor to paint some large frescoes at the new German Embassy in Rome.——Considerable street improvements are again proposed at Berlin, with regard to which Baurath Kyllmann seems to be the prime mover. ——The Grunewald, near Berlin, which used to have a considerable reputation for the excellent paths reserved for horsemen, is now to be provided with paths for cycles; these will be about 9 ft. wide, will have a total length of 45 kilometres, and will run in all directions through the wood.—— We hear of a considerable number of minor competitions being held in Germany, including one for a town-hall at Stolp, a gymnasium at Hanau, and the development of an estate at Cassel.——At Munich there is to be next year a machinery exhibition of considerable importance, and particular attention is to be given to the question of protecting machinery in such a manner as to prevent accidents to the attendants.——The *Centralblatt der Bauverwaltung* of the 27th ult. published an extensive obituary notice of Wilhelm von Riehl, the late Director of the National Museums of Bavaria, who died in his seventy-fifth year. His work was of considerable importance in the development of the great national collections in Bavaria.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS. —The practice of the late Mr. W. S. Cross will be carried on at the same address, 18, Outer Temple, Strand, by his son, Mr. W. T. A. Cross, in partnership with Mr. A. A. Kekwick (who was associated with the late Mr. Cross for twenty years), under the style of W. S. Cross & Kekwick.

AN AUTOMATIC FIRE ALARM.—At Charing Cross Hotel on Monday a demonstration was given of Pearson's Patent Automatic Fire Alarm, the object of which is to give immediate indication of an outbreak of fire in any building in which the instrument is placed. The invention, which is fitted throughout Charing Cross Hotel, consists of a thermometer of the sixes pattern with a special fluid and a mercurial column. Two platinum wires are fused through the glass on the rising side of the column at any desired temperature, both being out of contact with the mercury except at danger. The expanding bulb and the contact or heat tube are filled above the mercury with a heavy hydro-carbon. When a fire occurs, the mercury is pushed by the expansion of the fluid in the bulb end on to the platinum contacts, thus closing the circuit, and causing an alarm to sound wherever the connexion is made. The thermometer is placed in ceilings of rooms, offices, or warehouses, and connexion is made with the district manager's offices nearest the fire stations, and at West Ham and other districts outside the Metropolitan area the alarm is connected with the fire station. In this way the premises affected are known as soon as the heat is sufficient to make the thermometer rise to danger point. The invention, which was satisfactorily tested on Monday, has, it is claimed, received the approval of some of the fire insurance companies, and has been adopted by the War Office for use at the Royal Arsenal, Woolwich, the Army and Navy Stores, and at other establishments. The invention appears to be a useful one, and in view of constant outbreaks of fire and the consequent great loss of property, it is to be hoped that it will be extensively adopted.

THE FOREIGN CATTLE MARKET, DEPTFORD.—At the meeting last week of the Court of Common Council, a report of the Cattle Markets Committee was adopted for making extensive additions to the Deptford Market. The estimated cost of the scheme, for which Sir J. Wolfe Barry is retained as engineer, amounts to about 80,000*l*. The Corporation propose to acquire some house property at Grove-street-gate, in Grove-street, Barnes-terrace, Watergate-street, and Prince-street, and to lay down lines of railway and a tramway, to be worked by either animal, electrical (overhead or otherwise), gas, or cable power. The railways will communicate with the London, Brighton, and South Coast's branch to Deptford Wharf, and it is intended that the Admiralty shall be authorised, by statute, to construct junctions therewith for the service of the Victualling Yard. The Corporation seek powers to apply the market revenue, and to borrow money on the security of the market, for carrying out their project. As some of the property to be taken is inhabited by the working-classes, provision will have to be made for reinstating the dispossessed tenants. In two years (1895 to 1897) the market traffic has increased from 48,577 to 209,426 cattle, besides large numbers of sheep.

NEW ELECTRICAL APPLIANCES.—We have received a description of the "new foliated rolled metal dynamo brushes," manufactured by the Dynamo Brush Company, Finsbury-pavement, E.C. These brushes are made of strips of metal of the thickness of tissue paper, and, being very soft and pliable, produce very little wear on the commutator. They are not made of pure copper, but of an alloy called anti-friction metal; as they weigh, however, 60 per cent. more than ordinary gauze brushes their conductivity is greater. Another advantage is that their life is three or four times as long as that of ordinary brushes. They are expensive to buy initially, but as they produce very little wear and tear of the commutator, and seldom require replacing, they are more economical than cheaper ones. We have also received from the same Company a sample of "Talcine," which is described as a new lubricant for commutators. Although in general we do not approve of lubricating the commutator at all, yet when hard strip brushes are used it will be found advantageous to put a little lubricant on it to prevent it from being cut by the brushes. "Talcine" seems very suitable for this purpose. Inexperienced dynamo attendants and amateurs are apt to put too much oil on the commutator or to use unsuitable oils, which carbonise and cause short circuiting with violent sparking and other troubles. If "Talcine" is used, all that it is necessary to do is to rub a stick of it very lightly a few times across the commutator. By doing this, and at the same time cleaning it thoroughly from dirt, grit, and oil, it will soon assume the dark burnished appearance so appreciated by engineers, and which is a sure indication of careful running.

THE CANON HOARE MEMORIAL, TUNBRIDGE WELLS.—The Canon Hoare Memorial has just been opened at Tunbridge Wells by the Archdeacon of Maidstone. The memorial, which rests on a granite plinth, consists of a base of dark Pennant stone, from which rises a Gothic structure, built of local sandstone from the Speldhurst Quarry. The lower stages are square, with buttresses at the angles, and on the front is an enriched panel containing a medallion portrait of Canon Hoare sculptured in statuary marble. This medallion has been executed by Mr. Bridgeman, of Lichfield. Below this is a marble tablet within a carved border bearing an inscription. This part of the design is finished with a cornice and enriched parapet, below which runs a band of tracery. Above the parapet is an octagonal stage with panelled faces surrounded by gablets ornamented and crochetted. The four angles are emphasised by pedestals carrying figures of the Evangelists and connected with the octagonal part by flying buttresses. The whole is crowned by a spire. The total height of the memorial is about 40 ft. Mr. Oldrid Scott, F.S.A., was the architect, and the work has been carried out by Messrs. Strange & Sons, the carving being by Mr. Tuttell, of Lincoln.

NEW PARK FOR SCARBOROUGH.—Mr. W. O. E. Meade King, an inspector of the Local Government Board, held an inquiry at Scarborough on the 30th ult. in connexion with the application of the Scarborough Corporation for sanction to borrow 620*l*. to defray the cost of certain work at Falsgrave Park, at the west end of the town, and the erection of a shelter in Victoria-road at its junction with Westborough. The Borough Engineer (Mr. H. W. Smith) gave evidence in support of the application.

SALE OF A BIRMINGHAM CHURCH.—A meeting of the trustees under the Birmingham Churches Act was held at Birmingham on the 1st inst. to consider offers for the site and building of Christchurch, which occupied a prominent position at the corner of New-street and Colmore-row. The edifice, which was built under an Act of Parliament, is one which was regarded as no longer required, and the funds derivable from the sale are applicable to the erection of a church or churches elsewhere. The building was sold to the trustees of the Colmore Estate, who own a great deal of adjoining property, for 65,000*l*.

BOLTON MASTER BUILDERS' ASSOCIATION.—The eighteenth annual meeting of the members of the Bolton Master Builders' Association was held at the offices, 11, Chancery-lane, on the 23rd ult., under the presidency of Mr. J. H. Marsden. The report and balance-sheet were adopted unanimously. The following is a summary of the report read by Mr. F. W. Briscoe:—In submitting their eighteenth annual report your Committee have pleasure in recording the fact that during the past year there have been no serious points of contention between the employers and operatives in any branch of the trade. The trade has been pretty well employed, and labour has been plentiful, but the plasterers have found occasionally a scarcity of good men. The report deals in detail with the various disputes, and goes on to say that the bricklayers signed new rules in May, a prominent feature being that wages went up to 10d. per hour. The slaters also signed new rules on November 1. Their wages were increased from 8½d. to 9d. per hour, the original demand being a penny per hour. Mill sawyers receiving under 8½d. per hour were granted an increase of 1s. 6d. per week. Corporation trading in competition with tradesmen still continued, and it was now considered a favourable time to urge the Corporation to cease the competition, both as regards gas, electricity, and water fittings and repairs. The Corporation had not only competed with tradesmen, but they secured the sole agency for certain goods, and forced tradesmen in the district to purchase from them. This was neither just nor equitable. It was a striking fact that the building trade furnished the largest number of labour disputes of any trade in the country. This was attributable to the frequent revising of the rules. In 197 disputes there were 370,022 hours lost by cessation of work, carpenters and joiners heading the list and bricklayers and masons following.—A vote of thanks having been passed to the President, officers, and Committee for their services during the past year, Mr. Marsden was elected to the Presidential chair, and Mr. Councillor Altham was re-appointed Vice-President, and Mr. Maginnis Treasurer. The Committee was then appointed as follows, viz.:—Carpenters and Joiners' Branch: Messrs. A. Atherton, W. Cunliffe, R. W. Kenyon, and W. Townson; Bricklayers' Branch: Messrs. Bradbury, Gornall, Scowcroft, and Talbot; Plumbers' Branch: Messrs. Cuerden, Jones, Lee, and Vause; Slaters' Branch: Messrs. Councillor Altham, Hodson, and Warr; Plasterers' Branch: Messrs. Critchley, Stewart, and Warburton; Masons' Branch: Messrs. Bocock, Dickinson, Glover, and Smith. The question as to the sawn stone rule of the masons was discussed, and referred to that branch. A vote of thanks was accorded to Mr. Marsden for his services as a member of the Executive of the National Association of Master Builders. In thanking the meeting, he desired to be allowed to retire from that Board, and asked that another representative should be nominated in his place. It was resolved that Mr. William Cunliffe, the ex-President of the Association, be nominated to the National Association to represent Bolton on the Executive Committee. It was resolved that the annual dinner be held on December 9 or 16.

CITY ENGINEER, LIVERPOOL.—At the last meeting of the Liverpool City Council, Sir A. B. Forwood, in reference to the appointment of a City Engineer to succeed Mr. Boulnois, said on November 18 the Health Committee resolved that a City Engineer be advertised for, and a special Committee was appointed to deal with the matter. If the general proceedings of the Health Committee had been confirmed without question, that resolution would have become binding on the Council, and without knowledge they would have fixed a salary and determined the procedure to be taken as regarded the appointment of a new City Engineer. The special Committee met, and adjourned until after the Council meeting. He thought that very properly the duties of the Engineer had been modified by the Committee by the removal of the duties of watching building plans, thus enabling him to deal with large questions, such as the development of roads in different parts of the borough. Hitherto the City Engineer had been looked upon as accountable to the Health Committee alone, and in the second place to the Council. In his opinion, a City Engineer ought to be clearly an officer of the City Council and not the servant of any committee. Then again, in the immediate future the Engineer would have to

deal with the new electrical tramway system. It was his view that the proper course was to appoint a committee to consider the question, and he begged to move "That so much of the proceedings of the Health Committee as relate to the appointment of the City Engineer be not approved, and that a special committee be appointed, consisting of Messrs. T. Hughes, Garnett, Banner, Bowring, Paull, Oulton, and Sir Arthur Forwood, to consider and report their recommendations as to such appointment and the duties of the office to the Council, and that the maximum salary be 1,500*l.* per annum." Captain Denton seconded the motion, which was defeated by 58 to 7. Mr. Edwardes proposed a further amendment—"That the resolution of the Health Committee of November 18, 1897, as to advertising for a new City Engineer, be amended by substituting 1,200*l.* for 1,000*l.*" Mr. Petrie seconded. The amendment was then put, and defeated by 30 votes to 29.

LIVERPOOL CITY COUNCIL AND CONTRACTS.—At the last meeting of the Liverpool City Council, Mr. Harmood Banner moved the reinstating of the standing orders numbered 90, 91, and 92, as follows:—"Any committee interested in contracts may from time to time add to the list of Corporation contractors the name of any person or firm applying to be placed on the list of Corporation contractors, and such person or firm shall be required to sign an undertaking in the following form, to be supplied by the Town Clerk:—'And ( ) hereby undertake, in carrying out any contract between ( ) and the Corporation, to pay the rate of wages and observe the hours of labour recognised and agreed upon between the trades-unions and the employers respectively, in the locality in which the work for carrying out the contract is to be performed, or such rate of wages and hours as are equivalent thereto, and that ( ) will not transfer, assign, or underlet, directly or indirectly, the contract or any part, share, or interest therein, without the written consent of the Corporation under the hand of the Town Clerk, and that ( ) agree to a condition being inserted in the contract to carry out this undertaking.' In all contracts entered into with any person or firm on the list of Corporation contractors, other than contracts for the supply of unmanufactured or patent articles, stores, materials, or natural products, a convenant or condition to the same effect as the foregoing undertaking shall be inserted. In case any contractor shall, in the opinion of the committee having control of his contract, fail to comply with the covenant in his contract with regard to sub-letting, wages, and hours of labour, the committee may direct the name of such contractor to be struck off the list of Corporation contractors, and his name shall not be again added to the list except by order of such committee." Mr. Banner thought that the rejection of this resolution left the Council in a position of having no standing orders which applied to fair wages, and he was confident that the spirit which existed in 1891, and which, if he was right, was really intensified now, required that something should be adopted so as to insist that those who dealt with the Corporation should treat their employees in the most fair and liberal spirit. What he pressed for was the insertion of the words "or such rate of wages and hours as are equivalent thereto." Unless these words were inserted, they would be placing themselves entirely in the hands of the trades-unions in reference to any work given out by the Corporation. He should be the last to reject the claims of the trades-unions, but he did not consider that he was justified in asking the Council entirely to place themselves in their hands. Did they believe that if this clause were adopted, by striking out the words "or equivalent thereto," the trades-unionists would not push on and insist that the same clause should be adopted as regarded all special work for the Council? Fair wages must be considered as of the first necessity in contracts made with the Corporation, but apart from these there were many firms who did not employ exclusively trades-unionists, but who at the same time paid fair wages. Alderman Radcliffe seconded the motion. Mr. J. R. Grant moved, as an amendment, the omission of the words "or such rate of wages and hours as are equivalent thereto." The clause referred to had been termed the "fair-wage" clause, but these words were used with such wide effect that it was anything but fair in its actual application. Mr. Rutherford seconded the amendment, which was defeated by 54 to 34. Ultimately the original motion was adopted.

REREDOS, ST. JOHN'S CHURCH, WATERLOO-ROAD, LONDON.—The Bishop of Southwark recently dedicated at St. John's, Waterloo-road, an oak reredos, which has been erected by the parishioners as a memorial of the Diamond Jubilee. The reredos is of carved oak, and the work has been carried out from designs by Mr. G. H. Fellowes-Prynne. It is divided into three portions. The centre one contains three panels, is surmounted by a circular pediment and carved tympanum, supported on two columns. The altar has been raised on three marble steps, and the whole of the sacrarium has been tiled with black and white marble. The walls have been panelled with oak, and a sedilia has been erected.

MURAL DECORATION, ROYAL EXCHANGE.—The fourth of the eight works which have been promised by different donors for the mural decoration of the Royal Exchange has advanced a further stage. The subject for the latest panel is an historical episode—"William the Conqueror granting a charter to the citizens of London"—by Mr. Seymour Lucas, A.R.A. It is the gift of the Mercers' Company, and the canvas was successfully stretched on to its frame on Friday last week in the Exchange, preparatory to being placed solidly in its niche in the north-west corner.

SOCIETY OF ANTIQUARIES OF SCOTLAND.—The annual meeting of this Society was held on the 30th ult., in Edinburgh—Mr. J. Balfour Paul, Lyon King of Arms, in the chair. The following are the office-bearers for the ensuing year:—President, the Marquis of Lothian; vice-presidents, J. Balfour Paul, Lyon King of Arms, Major-General Sir R. Murdoch Smith, and the Hon. John Abercromby; secretaries, David Christison, M.D., and Robert Munro, M.D.; foreign secretaries, Sir Arthur Mitchell, K.C.B., M.D., LL.D., and Thomas Graves Law; treasurer, J. H. Cunningham; curators, Robert Carfrae and Professor Duns, D.D.; curator of coins, Adam B. Richardson; librarian, James Curle; councillors, Sir George Reid, P.R.S.A., and John Ritchie Findlay; representing the board of trustees, Charles J. Guthrie, Thomas Ross, Gilbert Goudie, Reginald McLeod, C.B.; Sir Herbert Maxwell, Bart., M.P.; John Horne Stevenson, and Alexander J. S. Brook. From the annual report it appeared that the museum had been visited by 22,310 persons during the year, and that the number of objects of antiquity added to the collection had been 135 by donation, and 370 by purchase; while seventy-seven volumes of books have been added to the library by donation and 102 by purchase, and the binding of 150 volumes has been proceeded with. Among the more important donations to the museum is the series of articles discovered during the excavation of the Roman Camp at Ardoch, undertaken by the Society last summer, which have been presented by Colonel Home Drummond, of Blair Drummond, the proprietor.

THE ARTS AND CRAFTS OF THE RUSSIAN PEASANTRY.—Under the auspices of the Ruskin Society of Glasgow, Madam Pogosky delivered on the 29th ult., in the Lesser Hall, 100, West Regent-street, a lecture on "The Arts and Industries of the Russian Peasantry." Madam Pogosky, in the course of her lecture, said that if she had to speak of the Russian national arts and crafts she would confine her remarks mostly to the peasantry, because those arts and industries had been perfectly ignored by the other classes up to the last twenty years. The peasants not only practised those from time immemorial, but also preserved the old traditions in their songs, legends, rights, customs, and handicrafts. The Russian peasantry lived in communities, a social form which had disappeared everywhere in Europe but Russia, and which influenced their life greatly. Their houses were built in one or two streets, and were not scattered. The home industries as they appear now are much more specialised, and things which were made by peasants only for their own use, or at most for the local markets, were now made by the thousand and by the million, and found their way to large towns, although very often under a foreign name. Those villages had naturally developed some special industry. For instance, in one village every man and boy was a silversmith, and they supplied the whole of Russia with silver—silver-gilt cheap jewellery, enamelled spoons, holy images, chains, and rings; another large village on the Volga was engaged in making fishing-nets; and a third was netting webs of the finest kind for flour-mills, &c. In a large village in the province of Kazan all the men had taken to making ornaments of a composition metal made by themselves, and they were carried by pedlars to the remotest parts of the Caucasus, Bessarabia, and Siberia. The women of the same village were the best lace-makers in Russia. The peasantry of Nijnj Novgorod, having very little land, and being surrounded by immense forests belonging to the Crown, were specially famous for woodwork of every description. This industry had not been altogether degraded, although the low prices necessitated quickness in work.

FIREPROOF BUILDINGS.—Mr. Potter, the manager of the "United Kingdom Terra-cotta Fire and Sound-Proof Brick Company," writes:—"In your issue of the 27th ult. I noticed an article under the above heading, in which reference was made to a paper read by Mr. C. T. Purdie, before the American Society of Civil Engineers, in which Mr. Purdie calls attention to a "porous material made of sawdust and clay," stating that, in his opinion, this material will resist any combination of heat and water. May I be allowed to call your attention to the fact that this material has been sold on the English market, by my company, for several years, and I should be very pleased to submit sample, for testing, to any of your readers on receipt of an application."

THE LANGDON-DAVIES ALTERNATING CURRENT MOTOR.—One of the strongest objections urged against the alternating current system of supply is that it cannot be utilised for power purposes as readily as direct current. The motor invented by Mr. Langdon-Davies and now manufactured by the Davies' Motor Company goes a long way to remove this objection. From careful tests made on a 4 horse-power motor an efficiency of over 70 per cent. was obtained for all loads between 1·5 and 4·5 brake horse-power. This compares very favourably with the efficiency of a direct current motor of the same power. As the motor is an induction motor it has no commutator or brushes, and so there is absolutely no sparking. The only wearing parts are the bearings which support the armature, or rotor as it is more correctly called in this case, and so the cost of repairs will be a minimum. The motors are nearly twice as expensive as direct current motors, but they are very compact and light and run with very little noise. The latest form of Langdon-Davies motor is an improvement on the ones reported on so favourably by Professor Silvanus Thompson two years ago. If the Supply Company charge 3d. per unit for power, then for a 3 horse-power motor the cost per horse power hour will be 3d. The Davies Motor Company are prepared to let out motors by the month at a moderate rental, and, as they are all accurately tested for brake horse-power before they leave the works, manufacturers can calculate exactly what power obtained by their means will cost.

THE SANITARY INSPECTORS' ASSOCIATION.—Subsequently to the recent visit of this Association to Belgium, on which occasion the Association were received by the King of the Belgians at his palace, an elegantly bound copy of the "Special Belgian Number" of the *Sanitary Inspectors' Journal* was sent to the King, and the following autograph letter has been received in acknowledgment:—"Dear Sir Hugh,—You have been good enough to send me the special number of the journal of the Sanitary Inspectors' Association containing a record of their recent visit to Belgium. I thank you, and ask you to convey to the members of the council of that Association my sincere thanks for the attention they have shown in sending me, through your kind interposition, their interesting report.—Believe me, dear Sir Hugh, with my best regards,—LEOPOLD."

CARPENTERS' COMPANY'S EXAMINATIONS.—The annual examination in Building and Sanitary Construction held by the Carpenters' Company took place at their hall on December 2 and 4. Among the examiners present were Professors Banister Fletcher and T. Roger Smith, Mr. Henry Robinson, Dr. A. Wynter Blyth, Mr. Hampden W. Pratt (President of the Architectural Association), and Mr. W. Shepherd (President of the Institute of Builders). The number of candidates who entered was larger than in the previous year. The names of the successful candidates, arranged in order of merit, are as follows:—Silver medals: Messrs. S. A. Switzer and H. F. Bridel. Bronze medals: Messrs. H. C. Grubb, F. Hartnoll, Jno. Sanderson, and Jno. Parham. Certificates: Messrs. H. S. Higlett, E. J. Simmons, A. Thomas, H. Herbert, and H. T. Hunt. Passed: Messrs. F. Dawkins, Geo. Ellis, J. Landen, E. W Turner, W. W. Winn, Jas. Nighy, H. Body, R. H Ellis, and A. S. Henley. Mr. Alfred Carter obtained marks entitling him to a silver medal, which, as he already holds it, cannot be awarded to him again.

PETRIFITE, LIMITED.—A company has been formed with a capital of 300,000*l.*, divided into 300,000 shares of 1*l.* each, to acquire the patents for Petrifite Cement; the leasehold magnesite quarries, about 5,000 acres in extent, in the Island of Eubœa, Greece; and plant, machinery, &c., at Blackwell; and also to carry on and grant licences for the manufacture and sale of Petrifite and its products, and to sell raw and calcined magnesite in all countries. As most of our readers are aware, Petrifite is a white cement composed chiefly of magnesite, which, when mixed with water, will solidify or bind together almost any kind of waste material, such as slate dust, sea sand, road sweepings, sawdust, common earth, &c. From these and other materials, building blocks, paving slabs, imitation woods, &c., can be formed, and the material will be supplied at from 30*s.* per ton upwards; 35 bushels going to the ton against 20 bushels of Portland cement. The results of the tests by Messrs. D. Kirkaldy & Son were printed in our issue for November 13, as well as other information about the material. Under the purchase agreement the vendors undertake to transfer to the company the lease of other magnesite quarries at Afrati, in the same locality, over 1,000 acres in extent, held for an unexpired term of upwards of seventeen years, or, if they are unable to do so, 10,000*l.* in shares will be deducted from the purchase price. It is estimated that the average annual sale of Petrifite will average 100,000 tons, and an average gross profit of 20*s.* per ton is expected. A yearly sale of 30,000 tons of magnesite is anticipated, yielding a net profit of 15,000*l.* per annum. The purchase price has been fixed by the vendors, who are the promoters of the company, at the sum of 200,000*l.*, payable as to 80,000*l.* in fully paid-up shares, as to 35,000*l.* in cash, and as to the balance of 85,000*l.* either in cash or fully paid shares, or partly in both, at the option of the directors.

CAPITAL AND LABOUR.

ABERDEEN JOINERS.—A dispute has occurred in the joiners' trade in Aberdeen. The local union (Associated Carpenters and Joiners) last month demanded from and after February 1 next, an eight hours day, an increase of standard rate of wages from 8d. to 9d. per hour, and a rise in the allowances for demolishing houses and for country work. The employers declined to confer unless the request as to hours and wages be first withdrawn. The men

have refused to agree to this, holding that the by-laws mutually agreed on provide that a conference must take up all points advanced timeously. It is feared the dispute will result either in a strike or a lock-out.

LEGAL.

LIGHT AND AIR CASES.

IN the Chancery Division on the 3rd inst., Mr. Justice Romer heard the case of Carter *v.* Spenser, Turner, and Boldero.

Mr. Alexander, Q.C., said this was a motion for an injunction to restrain the defendants, who are large drapers in the City, from building so as to infringe the plaintiff's ancient lights. He was, however, glad to say that the parties had come to an arrangement, and the solicitors had signed terms. He proposed, therefore, to take an order staying all further proceedings upon those terms, with liberty to apply to enforce those terms if necessary.

Mr. Justice Romer: I suppose the terms are such that I can make an order?

Mr. Alexander: Oh, yes, my lord. The defendants pay the plaintiff 100*l.* damages and costs as between solicitor and client.

Order accordingly.

In the same Court the case of Crane *v.* The Nottingham and County Constitutional Club, Limited, came on for hearing, it being a motion by the plaintiff for an injunction to restrain the defendants from interfering with the plaintiff's light and air.

Mr. Neville, Q.C., for the plaintiff, said his client was *non compos mentis*, and was suing by his next friend. The learned counsel then handed up a model to his Lordship and pointed out how the plaintiff's windows had been affected by what the defendants had done, and how the light and air originally were enjoyed by the plaintiff, and the height to which the defendants had built.

Mr. Micklem, for the defendants, said that before this action was begun he gave an undertaking in the terms of the notice of motion.

Mr. Neville: I am now asking for a mandatory injunction.

His Lordship: Can you try the case on affidavit evidence? The sole question is whether there shall be simply damages or a mandatory injunction.

Mr. Micklem: That is so, my lord. But something turns upon conversations some time before the issue of the writ, and upon the affidavits as they stand there is a difference between us.

Mr. Justice Romer: I do not intend to try this case twice, and I will try it speedily. What do you say to this: affidavit evidence and cross-examination of any witnesses if desired—and I will try it on Tuesday week?

Both the counsel agreed that would be the most convenient course, and accordingly the motion stood for trial on Tuesday week, each party to give notice which witnesses they wanted to cross-examine and those witnesses to attend in Court, the whole question of costs to be dealt with at the trial.

JUBILEE STANDS.

A CASE under the London Building Act, in connexion with the inspection of stands to view the Jubilee Procession, was decided by Mr. Fenwick at Southwark Police-court on the 30th ult. Messrs. Patrick & Son, builders, of Westminster Bridge-road, were summoned by Mr. Bernard Dicksee, District Surveyor, for the non-payment of 23*l.* 12*s.* 6*d.*, his fees for inspecting a number of stands erected by the defendants within the premises of Messrs. Day & Martin, Limited, Borough-road.

At previous hearings evidence was given that the stands in question were inspected on the complainant's behalf by a young man named Brown, who was not a qualified surveyor, and it was contended that Mr. Dicksee ought to have personally inspected them.

Mr. Washington appeared for the complainant; and for the defendants Mr. George Elliott and Mr. Gordon Davies were instructed by Messrs. Edwin & Son.

The magistrate, in giving judgment, said the work of surveying and inspecting was obviously work of a personal character, involving the exercise of professional skill, judgment, and experience, and in his opinion, such work could only be performed by the District Surveyor himself, an assistant surveyor, or by his deputy duly appointed under Section 142. To hold the contrary would have the result that in no case need the surveyor personally visit the premises. He could sit in his office, and sanction, or disapprove, upon reports brought to him by his clerk, or series of clerks, and he (the magistrate) was confident that that was not the intention of the statute. Therefore, he non-suited the complainant, but would grant a case if desired. The whole matter arose out of the fact that the district allotted to the complainant was too large for him, and that more assistants were required.—*Morning Advertiser.*

THE LONDON BUILDING ACT.

AT the North London Police-court, on the 30th ult., Mr. d'Eyncourt had before him the case of the London County Council *v.* Foulkes, which related to proceedings under the London Building Act of 1894. The defendant has been engaged since 1893 in developing an estate of about eight acres, known as The Willows, Clissold Park, Stoke Newington. The estate has a crescent-shaped frontage to Park-lane, a quarter of a mile long, and has been built over with a serpentine road, the ends of which are at the western and eastern ends of the crescent. Thus three closely-packed lines of houses have been placed on the property, and in the serpentine thoroughfare—Carysfort-road—spaces had been left for the formation of a small inner crescent. All this was done before the Act of 1894 came into operation. In November, 1895, the defendant started to build on the smaller crescent, but the County Council refused to give its assent. The case ultimately came before this Court, when the defendant contended that as he had commenced to lay out the land before the passing of the Act he did not need the consent of the Council to proceed with the work as required by the Act of 1894.

Mr. d'Eyncourt found in favour of the defendant, but the County Council took the case to the High Court, and the judges (Justices Wright and Kennedy) then reversed the decision. The matter now came up for Mr. d'Eyncourt to impose penalties, but Mr. Salter, who appeared for the defendant, wished to reopen the case on the ground that the judges had only decided one of the three points which the magistrate submitted for their decision.

Mr. Chilvers, for the County Council, said that the whole matter was argued in the High Court, and the judges dealt with all the points in their judgment, although in their order it was only mentioned that they found that the work was wrongfully commenced or recommenced after the Act of 1894 came into operation.

Mr. d'Eyncourt said his view of the order of the High Court was that he was wrong, and that he was directed to reverse the decision altogether. He should therefore impose a penalty of 3*l.*, with 2*l.* 2*s.* costs.

THE COMBINED DRAINAGE QUESTION.

AT the North London Police-court, on the 1st inst. the owners of Nos. 116 to 138, Culford-road, Kingsland, were summoned, before Mr. d'Eyncourt, at the instance of the Hackney Vestry, to show cause why they should not make good the defective drainage of the houses. Mr. Tiddeman prosecuted for the Vestry; Mr. Walter Windsor defended. Mr. Tiddeman said in this case the drainage of twelve houses was affected. The question would be raised, he believed, that this was a combined system of drainage. He should prove, however, that the drainage was laid with the consent of the Vestry, or the Hackney Board of Works, as it then was, and if the magistrate was satisfied that such consent had been given, then the drainage was repairable by the owners, and not by the Local Authorities. The Vestry now asked for orders for the abatement of the nuisance. Mr. James Lovegrove, Surveyor to the Vestry, produced the plan submitted for the drainage of these houses in June, 1857. In cross-examination the witness admitted that he refused to give his sanction to the plan as originally submitted by the builder. The builder proposed that the outfall should be between No. 116 and a brick wall. The witness required that the outfall should be between No. 130 and 132. The witness now found that the plan had been carried out as originally proposed by the builder and not as approved by the Board of Works. Mr. Windsor on this submitted that the consent of the Local Authority had not been given to the system that was laid down; therefore the drain became a public sewer, and as such was repairable by the Vestry. Mr. d'Eyncourt said that the Surveyor's evidence appeared to put the Vestry out of court. Mr. Tiddeman, however, contended that it was the system of drainage which was approved by the Board of Works, and the fact that the builder had not carried out that which the Vestry stipulated should be done could not relieve the present owners from responsibility. Mr. Windsor said it was the duty of the Board of Works to see that the plans as they approved them should be carried out. Mr. d'Eyncourt said that he was inclined to support Mr. Windsor's contention, but he should adjourn the case in order that he might look into the cases on the point. Mr. Windsor: My contention is supported by two cases: "Crawshaw *v.* Taylor" and "Harland *v.* Lazarus." The latter is quite a recent case.—The summonses were adjourned.

In another case in the same road the same point was raised, it being contended that as the original plan showed the water-closet and sink at the side of the house, whereas in point of fact it was placed at the back, the whole system became a sewer repairable by the Vestry. Mr. d'Eyncourt held, however, that the sanitary arrangements of a single house could not affect the common drain. He therefore made the order asked for by the Vestry, with 23*s.* costs.—*Morning Advertiser.*

ACTION AGAINST THE SHEFFIELD ICE COMPANY.

AT Sheffield County Court, on the 2nd inst., before his Honour Judge Waddy, Q.C., the claim by Patrick Molloy, contractor, Hawley Croft, against the Sheffield Pure Ice and Cold Storage Company, Limited, to recover the sum of 24*l.* 15*s.*, alleged to be due to him for work done, was further considered. Mr. T. E. Ellison appeared for the plaintiff, and Mr. W. E. Clegg represented the defendant company. The case for the plaintiff was that he entered into a contract to pull down certain old buildings and sink a well on the company's premises in Pond-street. He completed the pulling down of the old buildings, for which the contract specified a price, but he alleged that the sinking of the well was stopped before the work was completed upon the instructions of the company's architect. The defendant company had paid him the sum of 50*l.* on account of work done, but plaintiff subsequently sent in an account for 74*l.* 12*s.*, giving credit for the 50*l.* paid on account, and asking for payment of the balance of 24*l.* 15*s.*, now set forth in his claim. The defendants repudiated this claim on the ground that plaintiff had not completed his contract, and that no such instructions to cease work as plaintiff alleged were given to him by their architect. The defendants further contended that, considering the amount of work done, plaintiff had already been overpaid by the sum of 50*l.* given on account. They would not have paid him this amount had they not expected that he was going to finish the contract. On behalf of plaintiff he himself gave evidence, along with Mr. Edward Holmes, architect, and Mr. John Morton, contractor and well sinker. For the defendant company evidence was given by Mr. H. W. Lockwood, architect; Mr. W. H. Lancashire, architect; and Mr. Henry Bookless, the manager. In the end, his Honour held that the contract had not been completed, and that plaintiff had already been amply paid for the amount of work he had done. Judgment for the defendant company.

FAILURE OF A LIGHT AND AIR ACTION: IMPORTANT JUDGMENT.

IN the Queen's Bench Division on the 8th inst., Mr. Justice Barnes heard the case of Colchester *v.* Brooks, which was an action by the plaintiff for an injunction to restrain the defendants, Messrs. Brooks, pianoforte manufacturers, from erecting a wall at the back of the plaintiff's premises in Lime-street, Camden Town, thereby causing an alleged obstruction to the access of light and air formerly enjoyed by the plaintiff.

Mr. Crump, Q.C., and Mr. Lewis Thomas appeared for the plaintiff, and Mr. Ruegg, Q.C., and Mr. T. D. Munns for the defendants. Mr. Crump said there was no business carried on at the plaintiff's house. The plaintiff had a lease of the house, which had enjoyed light and air for a great many more years than was necessary under the Act. The house was tenanted by a veterinary surgeon. In the beginning of the year the defendants, whose factory was a little lower down this locality, conceived the notion of extending a wall and they did extend it, despite remonstrances from the plaintiff, the wall being 24 ft. 6 in. high, which threw a shadow over plaintiff's windows and obstructed his light and air.

After hearing evidence for the plaintiff, his Lordship intimated that there was no case established; and after hearing Mr. Leonard Vincent Hunt, the defendants' architect, the only witness called for the defence, his Lordship expressed himself perfectly satisfied that plaintiff had no case. His Lordship added that unfortunately we lived in conditions when buildings were erected all around us, and although one could not help sympathising with anybody whose view was blocked by a wall, yet unless the light was materially affected there was no real foundation for an action. In this case it was clear on the plaintiff's own evidence that, although there might be some slight diminution of light, there was nothing which would give foundation for an action. Although he sympathised with the plaintiff, he must give judgment in accordance with the law on the matter. There was case after case on the subject, and all of them were practically in favour of the defendants upon such evidence—namely, that there was no material effect upon the plaintiff's light. Judgment would be for the defendants, with costs.

MEETINGS.

SATURDAY, DECEMBER 11.

South-West Polytechnic Institute (Manresa-road, Chelsea).—Miss Florence M. Gardiner on "The History of British Furniture, from Anglo-Saxon Times to the end of the Eighteenth Century." VI. 3 p.m.

British Institute of Certified Carpenters.—Annual Meeting, Carpenters' Hall. 6 p.m.

SUNDAY, DECEMBER 12.

Sunday Lecture Society.—Mr. C. W. Kimmins, M.A., D.Sc., on "Colour." 4 p.m.

MONDAY, DECEMBER 13.

Royal Institute of British Architects.—(1) Special General Meeting to confirm the Resolution of the Special General Meeting respecting the change to be made in By-law 30. (2) Fourth General Meeting (Ordinary) to read the following paper, namely:—"The Report on the Third Series of Experiments on Brickwork conducted by the Science Standing Committee," by Messrs. William C. Street and Max. Clarke. 8 p.m.

London Institution.—Mr. Charles Harding on "The Weather Office and its Work." Illustrated. 5 p.m.

Leeds and Yorkshire Architectural Society.—Mr. S. D. Kitson, M.A., on "Some Byzantine Churches in Greece." 7.30 p.m.

Bristol Society of Architects—Mr. G. A. Oatley on "A Visit to a Cistercian Monastery." Illustrated. 8 p.m.

Society of Arts (Cantor Lectures).—Mr. Eugene F. A. Obach on "Gutta Percha." III. 8 p.m.

TUESDAY, DECEMBER 14.

Institution of Civil Engineers.—Mr. R. B. Stanton, M.A., on "The Great Land-Slides on the Canadian Pacific Railway in British Columbia." 8 p.m.

Sheffield Society of Architects and Surveyors.—Mr. F. R. Farrow on "The Warming of Public Buildings."

WEDNESDAY, DECEMBER 15.

Architectural Association, Discussion Section.—Mr. A. W. Cleaver on "An American Hospital: its Heating and Ventilation."

Liverpool Engineering Society.—Adjourned discussion on (1) "Portland Cement," by Mr. Prosser A. H. Shaw; (2) "Experiments in the Acceleration of the Setting of Portland Cement," by Mr. Frank E. Priest. 8 p.m.

Carpenters' Hall, London Wall.—Distribution of Prizes to Students of the Trades' Training School, &c., by Sir J. Wolfe Barry, K.C.B. 8.30 p.m.

Society of Arts.—Dr. Samuel Rideal on "The Purification of Sewage by Bacteria." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Edinburgh Architectural Association.—8 p.m.

Edinburgh Architectural Society.—Mr. Forbes on "Normandy." 8 p.m.

St. Paul's Ecclesiological Society.—Objects of Ecclesiological interest will be exhibited and described. 7.30 p.m.

THURSDAY, DECEMBER 16.

Society of Antiquaries.—8.30 p.m.

FRIDAY, DECEMBER 17.

Architectural Association.—Mr. L. A. Shuffrey on "House Painting." 7.30 p.m.

Institution of Electrical Engineers.—(Held, by permission of the Chemical Society, at Burlington House). Continuation of discussion on Mr. L. Epstein's paper on "Accumulator Traction on Rails and Ordinary Roads." 8 p.m.

Institution of Civil Engineers (Students' Meeting).—(1) Mr. Archer D. Keigwin on "The Elastic Properties of Steel Wire." (2) Mr. W. L. Brown on "The Elasticity of Portland Cement." 8 p.m.

SATURDAY, DECEMBER 18.

Perth Architectural Association.—Visit to Sandeman Free Library.

London and Provincial Builders' Foremen's Association (Memorial Hall, Farringdon-road, E.C.).—7.30 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

23,888.—VENTILATING BUILDINGS, &c.: *G. C. Stephen.*—This invention essentially consists in the insertion into the sash frame below the window sash of a suitable frame, having wire gauze stretched across its aperture.

24,071.—SLIDING BOLTS FOR DOORS: *J. Chaplin.*—The invention consists in a square (or round) shoot attached to plate by two square staples, back staple having a peg in centre (underneath), which peg fits into hole in shoot. The shoot is kept in position by steel spring underneath, and is rendered secure by a loose swing latch, and fits into end bit as in ordinary bolts.

27,528.—CHIMNEY COWLS: *W. Allen.*—Inventor claims in cowls an interiorily situated inverted cone-shaped cap, adapted to be actuated up or down by a screw-threaded rod passing through a suspending bracket, and fitted with a nut.

28,089.—WATER WASTE PREVENTER: *O. Elphick.*—Inventor claims means for admitting air slowly to the syphon a short time before the syphon action finishes, and for gradually admitting more and more air until finally the syphon ceases to act.

28,888.—CONSTRUCTION OF WALLS, &c.: *E. Heman.*—Inventor claims a wall, partition, &c., compressing suitable supports or bearers, bands of metal fastened to the extending legs of these and formed with projecting tangs, and a filling-in of plaster or cement.

29,429.—BRICK KILN: *B. J. B. Mills.*—Invention covers, in a continuous brick kiln, the arrangement of the main draught and hot-air flues to produce up and down draught, the branch flue for conveying the hot air from the cooling sections to the drying sections, and the dampers for controlling all the said flues.

13,506.—APPARATUS FOR MEASURING AND MIXING SAND, &c.: *H. Alexander.*—In apparatus, whereby sand, cement, and other substances may be measured and mixed prior to their being fed to a press for forming bricks, tiles, &c., inventor claims compound hopper, having separate divisions in same in combination with a compound drum having separate sets of compartments of adjustable size.

NEW APPLICATIONS FOR LETTERS PATENT.

NOVEMBER 22.—27,309, J. Clegg and G. Swarbrick, Brickmaking Machinery.—27,329, G. Mazzolini, Door Check and Controller.—27,359, J. Bates, Window Sash Fastener, &c.—27,397, J. Johnson and others, Gulley and Stench Traps.

NOVEMBER 23.—27,423, D. Davidson and W. Cumming, Fireclay Brick Fireplaces.—27,429, J. Goulson, Water Taps.—27,448, C. Lyon, Door Knobs.—27,515, R. Lowe, Traps for Drain Pipes, Sewers, Gullies, &c.

NOVEMBER 24.—27,561, W. Johnson and H. Walker, Kilns for Burning Cements, Limes, &c.—27,569, J. Earnshaw, Automatic Sash Fastener.—27,587, J. Davidson, Window Sashes.—27,594, H. Gill, Gully Trap.—27,612, T. Brightman, Fastener for Sashes.—27,616, H. White, Sash Frame Holder.—27,636, C. Danford, Protractor Levels.—27,660, B. and A. Lucas, Sash Fasteners.

NOVEMBER 25.—27,664, R. Bell, Sash Fasteners.—27,666, M. Crawshaw, jun., Sash Fasteners.—27,667, S. Symes, Gates.—27,676, R. McDonald and S. Brierley, Flushing Cisterns.—27,677, A. Scharffetter, Bricks for Building Purposes.—27,682, W. Ingham, Fireproof Walls or Partitions.—27,698, C. Udall and F. Royce & Co., Ltd., Wall Plugs.—27,724, W. Gundry, Window Sash Fasteners.—27,727, T. and J. Claughton, Bridges or Brackets for Supporting Levers Employed in Flushing Cisterns, &c.—27,745, J. Laurent and C. Herbillon, Fireplaces.

NOVEMBER 26.—27,776, T. Pfister, Cloisonné and Mosaic Work.—27,787, T. Fagg, Glazing Knife.—27,788, J. Griffiths, Marking Gauge and Mortice Gauge.—27,796, J. Lea, Kilns and Ovens for Firing Tiles and other Pottery-ware.—27,799, R. McDonald, Two-piece Closets.—27,817, A. Roberts and others, Ceramic and other Tiles.—27,800, R. McDonald, Cocks, Valves, Unions, &c.—27,825, J. Sellars, Manufacture of Cement.—27,842, J. Webb, Frost and Draught-excluding Overflow Valve for Waste Pipes for Cisterns, &c.—27,856, H. Richardson, Door Hinges.—27,860, H. Stilgoe, Sewer and like Manholes.—27,884, R. Glendinning, Roofing.

NOVEMBER 27.—27,907, J. Sharpe, Slow Combustion Fire Grates.—27,911, T. Kinder, Door or Cupboard Fastener.—27,944, W. Garner, Fireproof Shutter.—27,945, J. McLean, Door Locks and Fastenings.

PROVISIONAL SPECIFICATIONS ACCEPTED.

23,338, W. & I. Darby, Circulating Water for Greenhouses, &c.—23,696, J. Irwin, Holding Sliding Window Sashes.—23,888, T. Jones, Window Casings and Sash Frames.—24,179, C. Lee and C. Lawton, Manufacture of Cement.—24,750, T. Turner, Tipping Waggons, &c.—25,257, M. Adams, Flushing Syphons.—25,347, W. Littleton, Ventilating Drains and Sewers.—25,504, W. Peel, Fasteners for Windows, &c.—25,580, R. Gibson, Window Sash Fasteners.—25,601, C. Kirby, Spring Catches and their Arrrngements for Windows, &c.—25,656, C. Marks and F. Barnes, Bricks and Blocks for Building.—26,065, A. Smith, Varnish.—26,119, F. Brierley, Fireplaces.—26,124, G. Anderson, Stone-dressing Machinery.—26,209, W. Coaster, Window Sash Fastener.—26,243, L. Tebbutt, Removable Floor for Cement and Other Kilns.—26,278, F. Latham, Roofing Tiles.—26,384, F. Hancock & Co., Winzer Kilns.—26,425, E. Taylor, Gas Taps.—26,446, J. Clowes and others, Kilns.—26,449, J. Buxton, Glass Roofs.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

26,392, W. Freebury, Draught Excluder.—27,654, J. Gill, Ventilators.—28,795, J. Allen, Apparatus for Obviating the Rattling of Window Sashes and Preventing the same from being opened on the outside.—1,530, W. Allen, Flushing of Drains, &c.—1,728, G. Greenwood, Flooring Cramp.—1,915, H. Waddington, Water-closet Seats.—11,905, E. Smith, Stoneware or Earthenware Pipes.—13,065, S. Jablònski, Fireproof Protecting Compound.—14,398, E. Box, Securing Pipes in Sockets.

PRICES CURRENT OF MATERIALS.

TIMBER.

Greenheart, B.G.	ton	£4/0 £6/0
Teak, E.I.....load		12/10/0 15/10/0
Sequoia, U.S.R.cu.		1/8 1/10
Ash, Canada load		3/10/ 4/15/0
Birch, do.....		4/7.6 6.2.6
Elm, do.....		4/5/0 5/10/0
Fir, Dantzic, &c...		2/-/0 4/0/0
Oak, do.....		9/2 6 9/3 6
Canada		5/5/0 6/5/0
Pine, Canada red		0/0/0 0/0/0
Do. Yellow		2/12 6 4/12.6
Lath, Dantzic, fath		4/10/0 5/10/0
St. Petersburg..		5/0/0 6/10/0
Wainscot, Riga, &c., log		2 2 6 3 7 6
Odessa, crown....		2 0 6 3 7 6
Deals, Finland 1st and 1st 2nd		8 5/0 8/5/0
Do. 4th & 3rd...		6.5.0 6/15/0
Do. Riga		6/15/0 7/15/0
St. Petersburg, 1st yellow....		20 5 0 22/15/0
Do. 2nd yellow		9 5/0 10/15/0
Do. white		6/15/0 10/15/0
Swedish		9/5 0 13/15/0
White Sea.....		0/15/0 16.5/0
Canada, Pine 1st		20/15/0 26/15/0
Do. do. 2nd		15/5/0 17/15/0
Do. do. 3rd, &c.		7/15/0 12 5/0
Do. Spruce, 1st.		10/15/0 12 5/0
Do. do. 3rd and 2nd		8 5/0 9 5/0
New Brunswick		7/15/0 8.5/0
Battens all kinds boards,		5 o/o 00/0/0
sq., 1 in. prep.		0/6/6 0/15.6
1st		0/6/0 0/10/0
Do. 2nd		0/7/0 0/10/0
Other qualities—		0/5/0 0/6/0
Cedar, Cuba, ft.		/4 /4½
Honduras, &c.		/2 /3½
Mahogany, Cuba		/5 /6½
St. Domingo, cargo av.		/4 0/1 3
Mexican, do. do.		/3½ /4½
Tobasco, do. do.		/4 /5½
Honduras, do.		/4½ /6
Box, Turkey, ton		6/0/. 0/0/0
Rose, Rio.....		7/0/0 14/0/0
Bahia		[/0/0 10/0/0
Satin, St. Doming		0/0 5 0/0

TIMBER (*continued*).

Satin, Porto Rico		0/0/6 0/2.6
Walnut, Italian ..		0/0/3 0/0/7

METALS.

Iron—Pig, in Scotland .....ton		2/4/11½ 0/0 0
Bar, Welsh, in London.....		£/15/0 £/17/6
Do. do. at works in Wales		£/12/6 £/12/6
Do. Staffordshire, in London.....		£/3/0 £/10/0
COPPER—British cake and ingot		£1/0/0 £1/10/0
Best selected ..		£2 0/0 £2.10/0
Sheets, strong..		£6 1/0 £7/0/0
Chili bars		£8 8 9 0/0.0
YELLOW MTL lb.		4½. 5d.
LEAD—Pig Spanish ....ton		13 0/2 0/0/0
English com. brands		13/5 0 0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards ..		14 5 0 0/0/0
Pipe.....		£4 15 0 0/0/0
ZINC—English sheet.....ton..		£0/5/0 0/0/0
Vieille Montagne		£1/10 0 0/0/0
Spelter		£8 3 9 £8 6 3
TIN—Straits		£2/3 9 0/0/0
Australian.....		£3/7.6 £3/7.6
English Ingots.		£5/15/0 £6.15/0
Banca		£2/0/0 0/0/0
Billiton		£3/2/0 £2/0/0

OILS.

Linseed .....ton		£4/10/0 0.0.0
Cocoanut, Cochin		£7/15/0 0/0/0
Do. Ceylon		£2.10/0 0/0/0
Palm, Lagos.....		£2 15 0 0/0/0
Rapeseed, English pale		£7/10/0 0/0/0
Do. Brown		£6 0/0 0/0/0
Cottonseed ref. ..		£4 5/0 £5 5/0
Oleine.....		£3/10/0 £4 10/0
Lubricating U.S.		0 5 3 0/7 6
Do. black		0 5 0 0/6 6
TAR—Stockholm barrel		1/1 0 1/0/0
Archangel.....		0/12 6 0/-/
Turpentine		£3 12 6 £3 15 0

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

November 22.—By ESCRITT & BARRELL (at Sleaford).

Helpringham, Lincs.—A freehold farmhouse and 132 a. 1 r. 19 p.	£3,800

November 24.—By H. DUKE & SON (at Bridport).

Cattistock, &c., Dorset.—"Chantmarle Estate," 597 a. 0 r. 10 p., f.	8,800

By A. G. NOTLEY (at Lowestoft).

Blundeston, Suffolk.—"Blundeston Lodge" and 176 a. 1 r. 37 p., f.	12,500

November 25.—By BLACKFORD & SON (at Dolton).

Iddesleigh, Devon.—"Smytham Farm," 72 a., f., subject to an annuity of 7*l*.	1,570

By R. N. WHALEY (at Wainfleet).

Croft, Lincs.—A freehold farmhouse and 52 a. 1 r. 16 p.	2,260
Enclosures of land, 25 a. 2 r. 8 p., f.	1,230
Bratoft, &c., Lincs.—A freehold farmhouse and 219 a., f.	4,150

By HUSSEY & SON (at Teignmouth).

Dawlish, Devon.—Enclosures of land, 23 a. 3 r. 25 p., f.	1,590
Enclosures of land, 27 a. 0 r. 18 p., f.	1,650
A freehold building site, 5 a. 3 r. 1 p.	300
Two cottages and orchard, 1 a. 3 r. 4 p., f.	195
"The Retreat," cottage adjoining, and 0 a. 2 r. 7 p., f.	435
Teignmouth, Devon.—Enclosure of land, 14 a. 2 r. 9 p., f.	£575

By J. DAVEY & CO.

Chelsea.—Denyer-st., l.g.r. 9*l*., u.t. 3 yrs., g.r. nil, with reversion for 8 yrs.	170

By ANSTEY & SONS.

Walthamstow.—58 and 60, St. James'-st., f., r. 100*l*.	1,805

By J. BOTT & SON.

Sydenham.—Porthcawe-rd., f.g.r. 18*l*., reversion in 98 yrs.	424

By DYER, SON, & HILTON.

Bermondsey.—59, Maltby-st., area 1,704 ft., f., r. 40*l*.	700

By G. B. HILLIARD & SON.

Southminster, Essex.—"Doctor's Farm," 41 a. 1 r. 12 p., c., r. 68*l*.	2,000
"Great Cock's Farm," 27 a. 2 r. 0 p., f., r. 71*l*..	1,500
Two enclosures, 30 a. 2 r. 22 p., f.	650
Latchingdon, &c., Essex.—"Green Lane Farm," 120 a. 0 r. 24 p., f., r. 65*l*.	900

By HUMPHREYS, SKITT, & HUMPHREYS.

Clapton.—86, Forburg-rd., u.t. 90 yrs., g.r. 6*l*. 10s., r. 36*l*.	420
Limehouse.—27, Locksley-st., u.t. 64 yrs., g.r. 4*l*. 1r. 28*l*.	295

By NEWBON, EDWARDS, & SHEPHARD.

Canonbury.—St. Paul's-rd., i.g.r. 105*l*., u.t. 48½ yrs., g.r. 50*l*.	1,210
35, 37, and 39, St. Paul's-rd., u.t. 48½ yrs., g.r. 9*l*. 19s. 6d., r. 152*l*.	1,810
Islington.—Essex-rd., i.g.r. 58*l*. 15s., u.t. 38 yrs., g.r. 40*l*.	370
Clapton.—High-rd., "Kinnoull House" and "Holly Lodge," f.	4,450
Hampstead-rd.—19, Granby-st., f., r. 52*l*.	990
Tottenham.—69 and 71, Somerset-st., f., r. 55*l*. 6s.	760
Barnsbury.—87, Westbourne-rd., u.t. 62 yrs., g.r. 6*l*., r. 42*l*.	415
Highbury.—61, 63, and 65, Elward-st., u.t. 79 yrs., g.r. 18*l*. 18s., r. 94*l*.	875
Brighton.—100, Lansdowne-pl., f., e.r. 100*l*.	1,100

By STIMSON & SONS.

Norwood.—2, 4, and 6, Whiteley-rd., u.t. 69 yrs., g.r. 18*l*.	725
New Kent-rd.—22 and 24, Tarn-st., u.t. 12 yrs., g.r. 9*l*.	200
Brixton.—16 to 29, Ridgeway-rd., u.t. 73 yrs., g.r. 63*l*.	2,650
Finsbury-pk.—16, Coleridge-rd., u.t. 62 yrs., g.r. 10*l*. 10s., r. 46*l*.	340
Old Kent-rd.—16 to 22 (even), Haymerle-rd., u.t. 70 yrs., g.r. 25*l*. 4s.	530
Camberwell.—4, 6, 8, and 10, Crown-st., u.t. 57 yrs., g.r. 13*l*.	390
Hackney.—18 to 28 (even), Minerva-st., u.t. 8 yrs., g.r. nil	410
Walworth.—106 and 108, Penrose-st., u.t. 18 yrs., g.r. 11*l*. 11s., r. 6*l*.	400
Camberwell.—5 to 23 (cdd), Chumleigh-st., u.t. 8 and 11 yrs., g.r. 26*l*. 14s., r. 307*l*. 4s.	880
Walworth.—169 and 171, South-st., u.t. 55 yrs., g.r. 12*l*.	465
265 and 267, Beresford-st., u.t. 51 yrs., g.r. 8*l*., r. 52*l*.	550
Camberwell.—6 and 8, Avenue-rd., u.t. 67 yrs., g.r. 12*l*.	500
19 and 21, Cambridge-st., and l.g.r. 15*l*., u.t. 53 yrs., g.r. 21*l*.	370
50 and 51, Warrior-rd., u.t. 48 yrs., g.r. 7*l*.	430
140, 142, 144, 152, and 154, Wells-st., u.t. 51 yrs., g.r. 30*l*.	880
Old Kent-rd.—150, 152, 154, and 160, Coburg-rd., and 196, Neate-st., also l.g.r. 12*l*. 1s. 8d., u.t. 18 yrs., g.r. 16*l*.	620
Kennington.—21 to 36, and 132 to 139, Ethelred-st., u.t. 6¾ yrs., g.r. 252*l*.	790

By HENRY HENDRIKS (at Birmingham).

Henley-in-Arden, Warwick.—High-street, three freehold cottages	195
Birmingham.—252 to 256, Great King-st., f.	1,450
Barr-st., a plot of building land, f.	392
188 to 198 (even), Barr-st., and three houses adjoining, u.t. 36¾ yrs., g.r. 22*l*. 13s. 4d.	745

November 26.—By G. B. HILLIARD & SON (at Chelmsford).

Stondon Massey, Essex.—Enclosures of land, 5 a. 3 r. 28 p., f.	198

By BAKER & SONS.

Sidcup.—1 to 11, Blackhorse-ro., and 1 and 2, Back-rd., u.t. 60 yrs., g.r. 26*l*., r. 254*l*. 10d. ..	1,222
12 to 22, Blackhorse-rd., u.t. 44¾ yrs., g.r. 1s. ..	1,010
1, 2, and 3, Church-rd., u.t. 44¾ yrs., g.r. 3*l*. 12s.	370
4 and 5, Weardale-rd., u.t. 59½ and 63¼ yrs., g.r. 20*l*.	380
Weardale-rd., workshops, forge, &c., u.t. 68½ yrs., g.r. 3*l*., r. 34*l*.	240
Lewisham.—17, Ennersdale-rd., u.t. 77 yrs., g.r. 10*l*.	200

By BUCKLAND & SONS.

Rotherhithe.—Nolan's-pl., f.g.r. 55*l*., reversion in 84 yrs.	1,190
Norwood.—4 and 6, Stanger-rd., f., r. 70*l*.	880

By MARTIN, CLARKE, & CO.

Penge.—101, Lennard-rd., u.t. 71 yrs., g.r. 10*l*., r. 45*l*.	480
Walthamstow.—1 and 3, Eldon-rd., u.t. 83 yrs., g.r. 11*l*.	260

By A. J. SHEFFIELD.

Poplar.—9 and 11, Ellesmere-st., f.	600
28, Susannah-st., f.	425
Blackwall.—9, Scouler-st., f.	340
Cubitt Town.—6 to 24 (even), Stebondale-rd., u.t. 53 yrs., g.r. 50*l*.	850
Canning Town.—5, 6, 7, and 8, Norfolk-ter., u.t. 85½ yrs., g.r. 16*l*. 16s.	485
Dulwich.—28, Ondine-rd., u.t. 78 yrs., g.r. 6*l*., e.r. 35*l*.	320

By WILLIS & CROUCH.

Camberwell.—13, 14, and 15, Brunswick-sq., u.t. 44¾ yrs., g.r. 36*l*. 6s., r. 154*l*. 4s.	995
Clapton.—2, 4, 8, 10, 12, 14, and 45, Lesbia-rd., u.t. 86 yrs., g.r. 52*l*. 10s., r. 220*l*.	2,035
17A, College-av., u.t. 86 yrs., g.r. 7*l*. 10s., r. 28*l*.	265
Harlesden.—25, 29, 31, 35, 41, 43, and 45, Acton-lane, u.t. 92½ yrs., g.r. 49*l*., r. 370*l*.	4,985

By E. & S. SMITH.

Clerkenwell.—2, Lloyd-sq., u.t. 19¼ yrs., g.r. 7*l*. 10s., r. 50*l*.	315
10, Chadwell-st., u.t. 15 yrs, g.r. 10*l*., r. 60*l*. ..	340

CONTRACTS AND PUBLIC APPOINTMENTS.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Schools, Trindon Foundry	Wingate Sch. Bd.	J. Garry, Archt. West Hartlepool	Dec. 13
*Drinking Trough and Lamp	Coleford Diamond Jubilee Celebration Committee	Saunders & Bright, Secs. Coleford, Glos.	do.
Cottages, Monaghan-road Station, &c. Ireland	G.N.R. Co. (Ireland)	T. Morrison, Sec. Amiens-st. Terminus, Dublin	Dec. 14
Steel Girder Bridge, Amiens-street Terminus, Dublin	do.	do.	do.
*Pipe Sewers, Pump, Well, Tanks, Engine House, &c. &c.	Pontefract R.D.C.	Malcolm Patterson, 35, Manor-row, Bradford	do.
*Additions to County Asylum, Devizes	Wilts C. C.	County Offices, Stallard-st. Trowbridge	do.
Stores and Quarters, Patrick's Quay, Cork	Cork Steam Packet Co. Ltd.	J. F. M'Mullen, Archt. 30, South Mall, Cork	do.
Stables, Coach House, &c. The Limes, Crouch-street	Colchester U.D.C.	H. Goodyear, C.E. Colchester	do.
Cottage, Ragian Station, Mon.	G. W. R. Co.	G. K. Mills, Paddington Station, W.	do.
Kerbing, &c. Mill-lane, Enderby, Leics.	Blaby R.D.C.	W. King, Surv. The Sycamores, Blaby	do.
Pipe Sewers, &c.	Baildon (Yorks) U.D.C.	Robertshaw & Son, Surv. 35, Tyrrel-st. Bradford	do.
Brick Bridge, &c.	Ashton-under-Lyne Corp.	J. T. Earnshaw, C.E. Town Hall	do.
Club House	Fowey (Cornwall) Yacht Club	S. Hill, Archt. Green-lane, Redruth	Dec. 18
Additions to "Landien," Harthurn	M. Robinson	E. A. Whipham, Archt. 89, High-street, Stockton-on-Tees	do.
Additions to Church, Collingham Bridge, Durham	.....	C. Hodgson Fowler, Archt. The College, Durham	do.
Shops and House, St. Catherine's-rd. Forres, N.B.	.....	J. Forrest, Archt. 129, High-street, Forres	do.
Flints (2,500 cub. yards)	Hove (Sussex) T.C.	H. Endacott, Town Hall	do.
Granite, Kerbs, &c.	Northampton Corp.	W. J. Brown, Boro' Surv. Guildhall, Northampton	do.
Laundry, &c. at Hospital	Tewkesbury U.D.C.	Borough Surv. Tewkesbury	do.
House, Room, &c. at Cemetery	Rathdowa (Ireland) Union	J. D. Cope, Union Offices, Loughlinstown	do.
Superstructure of "Railway Tavern," Southend	.....	Thomson & Greenhalgh, Archts. Bank-chambers, Southend	do.
Surveyor's Materials	Barnsley T.C.	J. H. Taylor, Boro Surv. St. Mary's-place	do.
Sewering, &c. Pattesen-road, St Augustine, Norwich	.....	F. Horner, Queen-street, Norwich	do.
Street Works, Carlyle-road, &c.	Ealing U.D.C.	C. Jones, C.E. Public Buildings, Ealing, W.	Dec. 16
Four Houses, &c. East side Flamborough-road, Bridlington Quay	W. Baldwin	J. Earnshaw, Archt. Wellington-road Bridlington Quay	do.
Four Pairs Cottages, Bromley, Kent	Bromley Co.-op. Soc. Ltd.	E. Bragg, East-street, Bromley	do.
*Alterations at Public Baths	Westminster Vestry	G. R. Wheeler, Town Hall	do.
Two Houses, Glanton, nr. Alnwick	Mrs. Cummings	G. Rowell, jun. Archt. Alnwick	do.
Three House and Shops, Llanwrtyd Wells, Wales	.....	D. Jenkins, Archt. Llandilo	do.
Water Mains, Valves, &c.	Bray Township Comrs.	A. D. Price, C.E. Town Hall	do.
*Pipe Sewer, Manholes, &c.	Wanstead U.D.C.	Council Offices, Wanstead	Dec. 17
Road Works, St. George's-road	Preston Corp.	Borough Engr. Town Hall	do.
Pipe Sewer	Bognor U.D.C.	Town Surv. High-st. Bognor	do.
Drainage Works, Glasshoughton	Pontefract R.D.C.	M. Patterson, C.E. 35, Manor row, Bradford	do.
Four Houses, &c. New-road Side, Horsforth, Leeds	.....	J. P. Kay, Archt. 34, Prudential-bldgs. Leeds	do.
Sewer, Spring Well	Durham R.D.C.	G. Gregson, Surv. 45, Western-hill	do.
School and House, Bridlington	.....	Botterill, Son, & Bilson, Archts. 52, Parliament-st. Hull	Dec. 18
Alterations to 242, Cleethorpe-road, Grimsby	M. Abrahams	Mitchell & Co. Surv. 112, Cleethorpe-rd. Grimsby	do.
Additions to Police Station, South Bank, Yorks.	.....	W. Stead, C.E. County Surv. Northallerton	do.
Offices and Stores	Tunbridge Wells Corp.	T. E. W. Mellor, C.E. Borough Surveyor	do.
Lavatory, &c. Corn Exchange	Leeds Corp.	City Engr. Municipal-bldgs.	Dec. 19
Retorts, Fire Bricks, &c. for Gasworks	Bury (Lancs.) Corp.	W. S. Gendall, Gas Engr. Elton, Bury	Dec. 20
Villa, Briton Ferry, Wales	.....	H. A. Clarke, Archt. Briton Ferry	do.
Sewerage Works, Cambridge-street, &c.	Stockton-on-Tees Corp.	K. F. Campbell, C.E. Boro Engr. Town Hall	do.
Additions to School, Pontllanfraith, Mon.	Mynyddislwyn Sch. Bd.	G. Rosser, Archt. Abercarn	do.
Reservoir, &c. Brunton Burn	Bo'ness (N.B.) Police Comrs.	Leslie & Reid, C.E. 72a, George-st. Edinburgh	do.
*Electric Light Station	Barking Town U.D.C.	C. J. Dawson, Public Offices, Barking	Dec. 21
*Kerbing, Tarpaving, &c. Brownhill-rd. Catford	Lewisham Bd. of Wks.	Surv's. Office, Town Hall, Catford, S.E.	do.
*Heating Stores	Workington Indus. Soc. Ltd.	W. G. Scott & Co. Victoria-bldgs. Workington	Dec. 23
Paving, Flagging, &c.	Urmston (Lancs) U.D.C.	Mr. Hooley, C.E. Council Offices	Dec. 21
*Brick or Concrete and Pipe Sewers	Tottenham U.D.C.	P. E. Murphy, Engr. 712, High-road, Tottenham	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Dispensary	Enniskillen Union	R. Wilson, Board Room, Workhouse, Enniskillen	Dec.
School Room, New-st. Welshpool	.....	Mr. Powell, Archt. 19, Broad-st. Welshpool	Dec.
Granite, Shoreham Harbour, &c.	West Sussex C.C.	W. B. Furner, County Surv. 31, Bedford-rd. Horsham	Dec.
Main Outfall Sewer	Rugby U.D.C.	D. G. Macdonald, C.E. Rugby	do.
Alterations to Post Office, Bideford	Bideford Bridge Trustees	R. T. Hookway, Archt. Bideford	Dec.
*Erection and Completion of 36 two-story Tenement Building, fronting Chester-st. &c.	Manchester Corp.	City Surv. Town Hall	do.
*Erection and Completion of 36 two-story Tenement Buildings, fronting a New-st and 18 Cottages, facing George Leigh-st.	.....	.....	do.
Electric Light Station	Barnsley Corp.	G. H. Pickles, Boro' Surv. Town Hall	do.
Street Works, St. James' Park Estate Sea Wall, Mass Abereistedd	Tunbridge Wells Corp. Criccieth (Wales) U.D.C.	Boro. Surv. Town Hall. T. Roberts & Son, Portmadoc	Dec. 16 Dec. 31
*Granite Kerb and Setts and Concrete Flags	Walthamstow U.D.C.	G. W. Holmes, Town Hall, Walthamstow	Dec. 31
*Water Tower, Pumping Station, Engines, Machinery, &c.	Foleshill R.D.C.	M. B. Nichols, 59, Corporation-st. Birmingham	do.
*School	Frinton (Essex) S.B.	S. T. James, Frinton-on-Sea	do.
Bridge and Approaches, Glantanat Isa	Denbighshire C.C.	R. L. Williams, County Surv. Denbigh	Jan. 1
*Various Works and Materials	St. George (Hanover-square) Vestry	G. Livingstone, 1, Pimlico-road, S.W.	do.
Sewer, Feustanton	St. Ives R.D.C.	G. D. Day, The Broadway, St. Ives	do.
Waterworks, Bundoran	Ballyshannon Union	J. Ferry, C.E. County Surv. Galway	Jan.
*Buildings to accommodate 800 Persons and Offices	St. Olave's Union	A. H. Newman, 31, Tooley-st. S.E.	Jan. 12
*Jacket Pipes and Connexions	Shanklin U.D.C.	Francis Newman & Cocks, 2, St. Thomas-st. Ryde, Isle of Wight	Jan. 3
Extension of Printing Works, Harrogate	.....	Whitehead & Smetham, Archts. Albert-st. Harrogate	No date
Steam Brickmaking Works, Yarm-rd. Stockton	Eaglescliffe Road Brick & Tile Co. Ltd.	J. Sanderson, Arcat. 131, High-st Stockton	do.
Rebuilding "Old Queen Anne Inn," Holbeck, Leeds	.....	A. D. Kaye, Archt. 71, Albion-st. Leeds	do.
Additions to Sutton National School, St. Helen's, Lancs	.....	F. & Biram, Archt. Windsor-chambers, Hardshaw-st. St. Helen's	do.
11, Terrace-houses, Chrisharbon-park, Clayton, Yorks	.....	S. Spencer, Archt 344, Gt. Horton-rd. Gt. Horton	do.
Pair semi-detached Houses, &c. Fair field, Lancs	.....	J. H. Burton, Archt. 2, Guide-lane, Healey Hill	do.
Additions to Business Premises, Martin-st. Stratford, E.	S. Gulliver & Co.	W. F. Taylor & Son, Archts. Aylesbury	do.
Pipe Sewer	Audenshaw (Lancs) U.D.C.	J. F. Burton, Surv. 2, Guide-lane, Healey Hill	do.
*Hotel, Padstow, Cornwall	.....	Crickmay & Sons, 13, Victoria-st. S.W.	do.
Methodist Chapel, Skegness, Lincs	.....	H. Harper, Archt. Market place, Nottingham	do.
Fifty Cottages, Edmonton, N.	.....	Fuller & Jackson, 11, Grocers' Hall-ct. E.C.	do.
Warehouse, Providence Mills, Oakworth, near Keighley	.....	Judson & Moore, Archts. York-chambers, Keighley	do.
Memorial Church, Llandudno	.....	J. O. Scott, Archt. 38, Spring-grdns. S.W.	do.
Post Office, Worthing	.....	R. & Hyde, Archt. Worthing	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Surveyor, Inspector of Nuisances and Canal Boats	Cannock U.D.C.	100l. 125l. and 52.—230l. per annum combined	Dec. 14
*Sanitary Inspector	Lambeth Vestry	125l. rising to 170l.	Dec. 17
*Foreman of Paviors	Leicester Corp.	2s. per week	Dec. 21
*Draughtsman	Uganda Railway Com. (Foreign Office)	200l. rising to 300l. free quarters, passage, &c.	Dec. 21
*Borough Surveyor	Ramsgate T.C.	300l. rising to 400l. per ann.	Dec. 30
*Sanitary Inspector	Malborn Bd. of Wks.	120l. per annum	Jan. 31
*Engineering Assistant	Herne Bay U.D.C.	31. 3s. per week	No date

These marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. Contracts, pp. iv. vi. viii. & xix. Public Appointments, pp. xvi. & xix.

By C. & H. WHITE.

Walworth.—329, Walworth-rd., u.t. 18 yrs., r. 125*l.*, including plant, fixtures, and fittings £800

November 29.—By ELLIOTT, SON, & BOYTON.

Regent-st.—No. 18, beneficial leases, u.t. 20 and 18½ yrs., r. 500*l.* 300

Notting Hill.—Holland Park-av., i.g.r. 30*l.*, u.t. 25 yrs., g.r. 18*l.* 165

By MORGAN, BAINES, & CLARK.

Sutton, Surrey.—High-st., a freehold plot of building land 3,200

By A. THOMAS, PEYER, & MILES.

Harpenden, &c., Herts.—"The Harpenden Brewery," with two residences and thirty-four licensed houses attached, f. and l. 58,500

Harpenden, Herts.—Hatching Green, "The White Horse" b.-h., f. 1,600

Cold Harbour, "The Red Cow" b.-h., f. 1,000

Wheathampstead (near), Herts.—"The Park Hotel" and 5 a., f. 2,300

By LOMAX, SONS, & MILLS (at Blackpool).

Blackpool, Lancs.—"Top o' th' Town Farm," 124 a. 3 r. 36 p., f. 13,200

Middle-lane, seven plots of building land, area 33,233 yds., f. 4,500

November 30.—By BEAN, BURNETT, & ELDRIDGE.

Sydenham Hill.—"Belle Vue" and nearly 2 acres, f. 2,900

Sydenham Hill-rd., "Rosebank," f. 510

Regent's Pk.—Ormonde-ter., i.g.r. 75*l.*, u.t. 22 yrs., g.r. nil 815

Southwark.—9 and 11, Tabard-st., u.t. 98 yrs., g.r. 20*l.*, e.r. 120*l.* £1,160

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender: and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

BOURNEMOUTH.—For new relief sewers in the sea, Christchurch and Palmerston roads, Boscombe, Bournemouth. Mr. F. W. Lacey, Borough Engineer and Surveyor:—

G. Trube	£2,960	W. H. Saunders & Co.	£2,788
Cooke & Co.	2,742	F. Osman*	2,258
S. Saunders	2,622		

* Accepted.

BRIDLINGTON QUAY (Yorks).—For the erection of house, conservatory, &c., for Mr. J. Jefferson. Mr. J. Earnshaw, architect, Bridlington Quay:—

W. Haggard	£762 10	E. Corner, Bridlington Quay*	£691 1
W. Moody	696 7		
W. Barnes	695 0		

* Accepted.

BRISTOL.—For the erection of a pupil teachers' centre, Broad Weir, for the School Board. Messrs. La Trobe & Weston, architects, 20, Clare-street, Bristol:—

E. Clark	£4,845	W. Church	£4,495
A. E. Longden	4,765	H. A. Fone	4,444
E. Love	4,685	G. Humphreys	4,400
W. Cowlin & Son	4,640	Hughes & Weeks, Bristol*	4,350
J. Perkins	4,570		

Plumber's Work.

J. Wilkins	239 0	S. H. Povey	£171 0
F. & W. Bracher	234 6	G. F. Tuckey, Bristol*	159 0
A. Scull	229 0		

* Accepted.

BROMLEY (Kent).—For erecting a small villa in Crown-lane, for Mr. W. Watson. Mr. John T. Grubb, architect, Bromley:—

H. Chapman	£458 11	R. Harmer*	£345 0
T. Hutchings (accepted)	450 0		

* Withdrawn.

BURSLEDON (Hants).—For the erection of a bungalow and gardener's cottage, Netley Common, for Col. Perkins. Mr. Norman H. Atkins, architect, Fareham:—

	Bungalow.	Gardener's Cottage.
H. Stevens & Co.	£1,884	£457
T. Rashley & Son	1,680	375
Exors. of the late William Franklin	1,692	405
G. H. & A. Blackman (accepted)	1,495	359

CANTRAY (Inverness).—Accepted for erecting a shooting lodge, for Major Davidson, of Cantray. Mr. Robert Black, C.E. and architect, Inverness :—

Masonry.—Hugh Cameron	£739 15 0
Carpentry.—Fraser & Macdonald	835 16 0
Slating.—James Gray & Son	194 9 0
Plumbing.—Mackay & Maclean	266 0 0
Plastering.—C. R. Collie	286 0 0
Glazing, &c.—Donald Macdonald	88 0 0
Bells and Beams.—Rose Street Foundry Co.	15 12 0
	£2,405 12 0

[All of Inverness.]

CARDIFF.—For the construction of a service reservoir (500,000 gallons), water-tower, keeper's house, &c., Penylan Hill, for the Corporation. Mr. C. H. Priestley, C.E., Town Hall, Cardiff :—

T. W. Ridley	£11,984 0 6	Turner & Sons	£9,450 18 7
J. Strachan	11,464 10 6	H. Gibbon, Cardiff*	9,419 0 0
J. Allen	10,458 13 3	A. S. Morgan & Co.	7,764 18 2
J. Vevers	10,074 10 3	* Accepted.	

[Engineer's Estimate, £9,121. 17s. 5d.]

COLCHESTER.—For the erection of nurses' home, laundry, &c., at the hospital, for the committee. Messrs. Goodey & Cressall, architects, Victoria-chambers, Colchester :—

R. Beaumont	£3,544 11	H. Everett & Son	£3,400 0
G. Grimwood & Son	3,477 0	G. Dobson & Son	3,393 0
E. West	3,460 0	W. Chambers, Colchester (accepted)	3,269
F. Dupont	3,400 0		

DAWLISH (Devon).—For laying about 1,200 yards stoneware pipes, &c., for the Urban District Council. Mr. J. S. Delbridge, Surveyor, Priory-terrace, Dawlish :—

Sanders, Harding, & Co.	£783 16 8	Stephens & Son	£547 9 4
Gibson	691 0 0	Thomas	544 16 7
Canada & Newton	615 0 0	Hawking & Best, Dawlish*	529 10 2
Ringe & Boone	587 13 0	* Accepted.	
J. Wescott	558 7 6		

ELGIN (N.B.).—For the erection of excise offices, house, and warehouse, Strathspey, for Messrs. J. & G. Grant, Glenfarclas Distillery, Ballindalloch. Mr. C. C. Doig, architect, Elgin :—

Building.—R. & J. Mitchell, Huntly	Scheduled work.
Carpentry.—T. G. Archibald, Huntly	
Slating.—W. Leslie, Lossiemouth	
Plumbing.—J. Hunter, Elgin	
Painting.—J. Kintrae & Son, Elgin	
Ironwork.—Jas. Abernethy & Co., Ferryhill Foundry, Aberdeen	

ENFIELD.—For additions to school, Chesterfield-road, Enfield Lock, for the School Board. Mr. G. E. T. Laurence, architect, 18, Queen Victoria-street. Quantities by Messrs. D. Campbell & Son, 4, Finsbury-circus, E.C. :—

Knight & Son	£2,745	Batley, Sons, & Holness	£2,045
J. Cressan & Sons	2,524	G. Wilkinson & Son	2,014
General builders, Ltd.	2,500	W. Lawrence	1,943
P. Bazyard	2,350	A. Fairhead & Son	1,927
C. H. Hunt	2,289	T. Almond & Son, Ponder's End*	1,897
E. W. Newman	2,050	G. Godson & Son	1,875
J. Smith & Sons	2,195	* Accepted subject to approval of Education Department.	

ESHER (Surrey).—Accepted for alterations to shops, High-street, Esher. Mr. Henry Smith, architect, Finsbury-pavement, E.C. :—

G. S. Heasler, Esher £370

FORT AUGUSTUS (N.B.).—For making over a mile of new approach to Glendoe Shooting Lodge, Lovat Estate, for Mr. Herbert Weld Blundell. Mr. R. Black, C.E., 22, Union-street, Inverness. Quantities by the engineer :—

Chisholm & Co.	£1,187 10	Smith & Imry	£963 15
R. Fraser	1,092 10	W. Wilson	857 10
Watt & Co.	976 0		

FRIMLEY (Surrey).—For the construction of about 1,300 ft. 9 in. sewer, Avenue and Heatherley-road, for the Urban District Council. Mr. W. J. Hodgson, surveyor, Council Offices, High-street, Camberley :—

Seaker	£190 0 0	Watson	£160 0 0
Martin & Wells	185 0 0	Grounds & Hewton	158 0 0
Knap	170 0 0	T. Turner, Blackwater, Hants*	149 12 8
Dungay	156 0 0	* Accepted.	

GWAUN-CAE-GURWEN.—Accepted for additions, &c., to schools, for the Llanguicke School Board. Mr. W. Watkin Williams, architect, 63, Wind-street, Swansea :—

John Williams, Cwmgorse £447

HASTINGS.—For alterations to the "New Golden Cross Hotel," Nos. 52 and 53, Havelock-road, Hastings, for Mr. J. Prior. Mr. Joseph G. Needham, architect and surveyor, 18, Lower Clapton-road, N.E. :—

W. J. Maddison	£985	Peter Jenkins, Hastings*	£935
Pewtering.			
Regen	£70		
Electric Lighting.			
J. Steadman	£95 0	W. R. Woodward	£66 10
		* Accepted.	

HERTFORD.—For providing and laying 3-in. and 4-in. water mains, valves, &c., for the Corporation. Mr. J. H. Jevons, Borough Surveyor, Hertford :—

Mallet & Co.	£428	Norris	£320
Culley	310	Skins & Co.	304
Pizzey	285	Rayment & Son, Hertford*	293
		* Accepted.	

HERTFORD.—For paving, metalling, channelling, and lighting Railway-place, for the Hertford Corporation. Mr. J. H. Jevons, Borough Surveyor, Hertford :—

Culley	£518	Norris	£470

ILFORD.—For erecting fifteen villas in Auckland-road. Messrs. Verpick & Duns, architects :—

Heath & Farrow	£4,799 0	Hammond & Sons	£3,647 0
G. Lewis	4,447 0	F. Coxhead	3,600 0
T. E. Mitchell	4,410 0	F. Willmott	3,499 0
J. Silcock	4,237 10		

LLANDRINDOD WELLS.—For the extension of the sewerage system, for the Urban District Council. Mr. R. L. Bamford, Surveyor, Hereford :—

Ford & Hudson, Coalville*	£421	John Langford†	£336
John Brown	400	* Accepted. † Labour only.	

LLANGUICKE (Wales).—Accepted for additions, &c. to school buildings, for the School Board. Mr. W. Watkin Williams, architect, 63, Wind-street, Swansea :—

D. Rees, Ystalyfera £1 396

LONDON.—For alterations and repairs to No. 47, Fleet-street, City. Mr. W. Ernest Hazell, architect :—

R. D. Lown & Son	£345	Richardson Bros.*	£278
R. Bristow & Sons	260	* Accepted.	

LONDON.—For forming new waterproof cellar, structural alterations, with new front, new drainage and sanitary work, and repairs throughout, including trade fittings, &c. complete, to "Collings" Noasden-lane, Willesden, N.W., from plans and specification prepared by Mr. Arthur J. Farmer, of Southfields, S.W., for Messrs. Thorne Bros. No quantities :—

Allard & Co.	Too late	Easterbrook & Son	£965 19
Cowley & Drake	£1,220 0	Puttick Bros.	895 0

LONDON.—For pulling down and rebuilding No. 1, Little James-street, Bedford-row, W.C., for Mr. H. E. Holmes. Mr. Lewis H. Isaacs, architect. Quantities by Mr. J. F. Bull :—

H. King	£1,167	H. J. Woodrow	£1,095
C. W. Patten	1,117	E. Bristow & Sons*	1,092
R. E. Worsley & Co.	1,113	* Accepted.	

LONDON.—For repairs to "The Gladstone" beer-house, Bealeroad, Old Ford, E., for Messrs. Chandlers & Co., brewers, Hackney-road, E. Mr. Joseph G. Needham, architect and surveyor, 18, Lower Clapton-road, N.E. :—

E. Lancaster	£345	A. & T. Wilson*	£307 10
J. F. Collins	348	* Accepted.	

LONDON.—For works at No. 5, Bedford-square, W.C., for Dr. J. Hopper Baker, M.D. Mr. James Neale, F.S.A., architect, 10, Bloomsbury-square, W.C. :—

Contract No. 1	£322 1 11
Contract No. 2	237 9 2

N. Lidstone, 56, Blackstock-road, N., accepted at £539 11 1

MALLAIG (N.B.).—For the erection of business premises for Mr. A. S. Macintyre. Mr. Dan. Cameron, architect, Inverness. Quantities by architect :—

Wm. Bain, Creagorry, Benbecula £800

MALLING (Kent).—For building a pair of cottages, for Mr. T. Mead. Mr. John T. Grubb, architect, Bromley :—

W. Brown £454

MORLEY (Yorks.).—For the erection of seven through houses (joinery work only), for Messrs. W. & H. Sykes :—

Newton & Asquith	£320 0	David Furness	£300 0
N. Holroyd	308 10	J. E. Graysbon*	285 0
		* Accepted.	

NEWHAVEN.—Accepted for proposed alterations and additions to business premises, High-street, Newhaven, Sussex, for Mr. J. Bannister. Mr. W. Cooper, architect, 21, Havelock-road, Hastings :—

M. Woolger, Newhaven £475

PONTARDAWE.—For the erection of business premises for Mr. David Lewis. Mr. W. W. Williams, architect, 63, Wind-street, Swansea :—

Waltees & Johns	£2,170	John R. Williams	£1,895
John Griffiths	2,070	Dd. Rees, Ystalyfera*	1,675
Williams & Davies	1,880	* Accepted.	

SEAFORD.—For the erection of a country doctor's house, Broad-street, Seaford, Sussex, for Dr. W. P. Morgan. Mr. Wm. Cooper, architect, 21, Havelock-road, Hastings :—

J. Simmonds & Co.	£2 920	C. Morling	£1,953 10
F. Cruttenden	2,202	S. H. Berry	1,949

SILVERHILL, ST. LEONARDS.—For proposed new shop, and alterations to Sonnenberg, Silverhill, St. Leonards, Sussex, for Mr. R. L. Davis. Mr. Wm. Cooper, architect, 21, Havelock-road, Hastings :—

F. G. Hatton	£345	Tapner & Woodman	£298
Vigor & Co.	320	E. Guttsell	296
A. H. White	316	J. Cruttenden	293
J. Simmonds & Co.	315	Chapman & Cuff	287

SLOUGH.—For supplying materials for laying 300 yards 15-in. and 12-in. stoneware pipes; also c.i. pipes, &c., for the Urban District Council. Mr. W. W. Cooper, Surveyor, 1, Mackenzie-street, Slough :—

J. Deverill	£436 14 4	John H. R. Atkins, Ledgers-lane, Slough (accepted)	£304 1 7
T. Kelly	289 16 7		
M. S. Kitteringham	275 0 0		

SWANSEA.—For additions, &c., to Plasmarl School, for the U.D. School Board. Mr. G. E. T. Laurence, architect, 18a, Queen Victoria-street. Quantities by Messrs. W. Barber & Son, 22, Buckingham-street, Adelphi :—

W. Williams	£5,346 16	D. Jenkins	£4,750 0
Thos. Watkins & Co.	5,208 0	Walters & Johns	4,696 0
J. & D. Jones	5,150 0	Lloyd Bros.	4,680 0
Thos. Walters	4,935 10	Henry Billings	4,595 10
Gustavus Bros.	4,930 0	Thos. Davies	4,540 0
T. & F. Weaver	4,885 0	Bennett Bros.*	4,400 0
Elias Morgan	4,865 0	[All of Swansea.]	
		* Accepted subject to approval of Education Department.	

WANSTEAD (Essex).—For erecting a house in Grove Park. Messrs. Potts, Son, & Hennings, architects. Quantities by Mr. G. Fleetwood :—

Mundy	£1,420	Norton	£1,368
Scott	1,397	Willmott	1,343
Jolliffe	1,373	Hutchens, Wanstead*	1,290
		* Accepted.	

WIMBLEDON.—For alterations and repairs to "Grosvenor House," The Ridgway :—

C. W. Patten	£370	Parson & Townsend*	£340
R. Bristow & Sons	349	* Accepted.	

WIMBLEDON.—For making-up Avondale-road, for the Urban District Council :—

H. L. Crouch	£963	John Mowlem & Co., Westminster (accepted)	£639
Edmund Iles	651		

WINDSOR.—For the erection of dwelling-house, aerated water factory, and stabling, Bourne Avenue-road, Windsor, for Messrs. Williams & Dean, Windsor. Mr. John Geo. Casey, jun., architect. Quantities by architect :—

E. Bampfylde	£1,370	H. Burfoot, Eton Wick, near Windsor*	£1,180 10
R. Bishop	1,335	* Accepted.	
A. H. Reavell	1,297		

LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the following lists of tenders were brought up by the Works Committee :—

ESSENDINE-ROAD SITE.—Removing three iron buildings, &c., from the Conway-road site and re-erecting them on this site :—

Humphreys, Ltd.	£1,420	Croggon & Co.	£1,253
T. Cruwys	1,287	T. Hawkins*	1,155
W. Harbrow	1,262 10		

GIFFORD-STREET.—Providing corrugated iron roofs to landings :—

T. Cruwys	£45	Stevens Bros.	£24 10
Marchant & Hirst	32	G. S. S. Williams & Son*	24 10

LATCHMERE.—Providing drainage to the graded school and re-connecting the existing trough latrines in the girls' and infants offices :—

J. Garrett & Son	£1,732	Lathey Bros.	£1,519
R. A. Marshall	1,699	J. & C. Bowyer	1,515
Stimpson & Co.	1,660	W. V. Goad	1,465
F. G. Minter	1,620	Star & Son	1,448
W. Hammond	1,537	W. Akers & Co.*	1,395
E. Triggs	1,535		

MONNOW-ROAD.—Cleaning interior :—

C. G. Jones	£554 0 0	Johnson & Co.	£307 0 0
G. Summers	394 5 0	W. & H. Castle	294 7 5
E. Proctor	384 0 0	Holliday & Greenwood*	235 0 0
B. E. Nightingale	309 0 0		
H. J. Williams	307 10 0		

NECKINGER-ROAD.—Cleaning interior and painting exterior :—

Johnson & Co.	£407 10	H. J. Williams	£338 0
Star & Son	392 0	E. Triggs	332 0
E. P. Bulled & Co.	370 0	Holliday & Greenwood	315 0
E. Proctor	342 0	H. Somerford & Son*	278 0

OLD CASTLE-STREET.—Removing fence and providing iron railing, &c. :—

Bayliss, Jones & Bayliss	£73 0 0	R. H. & J. Pearson, Ltd.*	£26 19 6
	27 5 0		

ROYAL NORMAL COLLEGE.—Providing and laying floor to "Armitage" Skating Rink.

	New foundation. £ s. d.	New paving. £ s. d.	£ s. d.
Victoria Stone Co.—2-in. thickness of granite and cement paving; laid in situ. 5 years' guarantee, wear and tear excepted	176 7 8	131 11 0	307 18 8
French Asphalte Co.—½-in. thickness of asphalte; 5 years' guarantee. If 1 in. thick 12s. per yard extra	142 0 4	121 15 0	263 15
Messrs. Wilkinson & Co.—2-in. thickness of granite and cement; 5 years' guarantee	162 0 0	101 5 0	263 5 0
Limmer Asphalte Co.—½-in. asphalte; 5 years' guarantee	138 11 0	122 5 0	260 16 0
Val de Travers Co.—½-in. asphalte; maintained for 12 months	128 7 3	110 0 6	238 7
Messrs. Hobman & Co.—1 in. of Limmer asphalte; 5 years' guarantee*	93 0 0	107 9 0	220 9 0
Imperial Stone Co.—1¼-in. thickness of petrosilicon; 5 years' guarantee	110 12 0	84 12 0	195 0 0

UPPER HORNSEY-ROAD.—Taking down the two iron buildings and offices on this site, and stacking and covering the iron buildings on the Brentwood Industrial School site, and depositing the offices in the basement of the "Hugh Myddelton" School :—

T. Hawkins	£275 0	Humphries, Limited	£138 0
Croggon & Co.	175 0	T. Cruwys*	125 0
W. Harbrow	157 10		

Repairs on schedule on running contracts :—

BERGER-ROAD SITE.—Repairs, &c., at Nos. 1 and 2, Shepard's-place :—

W. Silk & Son	£65 10	A. J. Hutchins	£43 16
E. Pearce	48 15	F. Head*	40 0

BROOMSLEIGH-STREET, Fleet-road, Netherwood-street, and Netley-street.—Pruning trees and shrubs, &c. :—

B. S. Williams & Son* £7 7 6

FINSBURY.—Groups 1 and 2 :—

	Per cent.		Per cent.
McCormick & Sons	+25	F. W. Harris	+15
E. Lawrance & Sons	+22½	W. Hornett	+15
Marchant & Hirst	+20	Johnson & Co.*	+10
T. Nicholson	+20	[On schedule prices.]	

FORTESS-ROAD.—Adapting premises for a temporary school :—

R. A. Yerbury & Sons	£181 0	Marchant & Hirst	£123 0
Chase & Son	198 16	H. Eady	118 0
T. Cruwys	145 0	G. Ball*	115 0

TOWER HAMLETS.—Groups 4, 5, 6, and 7 :—

	Group 4. per cent.	Group 5. per cent.	Group 6. per cent.	Group 7. per cent.
T. H. Jackson	—	+25	+25	+25
S. H. Corfield	+20	+25	—	—
J. Kiddle & Son	+22	+20	+20	+20
J. Kybett	+20	+17½	+17½	+17½
A. W. Derby	+17½	+17½	+17½	+17½
D. Gibb & Co.	+17½	+15	+15	+15
Johnson & Co.*	+10	+10	+10	+10
	[On schedule prices.]			

WOOD-STREET.—Providing and fixing teak treads to sixty-six terra-cotta steps :—

C. Foreman	£73 15	W. Holding & Son	£42 10
J. H. Hodgin	59 10	E. Proctor*	32 0
A. J. Fenn	45 0		

The interior work at the following schools will be carried out between December 18, 1897, and January 8, 1898, and the exterior work between April 9 and May 7, 1898 :—

BARRETT-STREET.—Cleaning interior :—

G. Neal	£187 0	G. Foxley	£135 8
E. T. Folley	178 0	F. Chidley	105 0
H. Eady	140 0	Marchant & Hirst	99 0
W. Hailes & Son	138 0	F. T. Chinchen*	97 15

BLACKSTOCK-ROAD.—Cleaning interior and painting exterior :—

W. H. Stephens	£514 8	W. McCormick & Sons	£449 0
Stevens Bros.	488 10	J. Grover & Son*	417 0

"BRECKNOCK."—Cleaning interior :—

C. S. Jones	£321 0	W. McCormick & Sons	£272 0
E. Jackson & Son	322 0	Stevens Bros.*	268 10
Cowley & Drake	282 2		

BROMLEY HALL-ROAD.—Cleaning interior :—

Marsh, Tucker, & Co.	£328 0	J. T. Robey	£205 0
A. E. Symes	269 0	S. H. Corfield	188 0
J. F. Holliday	221 13	J. Kybett	168 0
W. G. Beaumont & Son	209 0	A. W. Derby*	183 0

CATOR-STREET.—Cleaning interior :—

W. Akers & Co.	£322 0 0	Rice & Son	£278 0 0
J. & A. Oldman	320 0 0	D. Charteris	272 0 0
W. V. Goad	317 0 0	H. Line*	236 0 0
W. & H. Castle	305 16 8	J. F. Ford	230 0 0
J. Garrett & Son	292 0 0		

CHARING CROSS-ROAD.—Painting interior :—

A. M. Sparks	£247 0	B. E. Nightingale	£190 0
G. Foxley	234 18	Lilly & Lilly, Limited	197 8
T. Cruwys	219 0	F. Chidley	145 0
W. Chappell	215 0	W. Brown*	137 10
W. Whiteley	199 15		

CRAMPTON-STREET.—Cleaning interior (including Laundry Centre, iron building):—

W. & H. Castle	£316 13 2	W. Hammond	£238 0 0
W. V. Good	318 0 0	J. F. Ford	230 0 0
T. Gregory & Co.	316 14 0	E. Triggs	221 10 0
J. Garrett & Son	268 0 0	E. Flood*	210 0 0
Star & Son	268 0 0		

CREDON-ROAD.—Cleaning interior:—

W. & H. Castle	£330 14 0	Holliday & Greenwood	£269 0 0
H. Line	299 0 0	G. Kemp	245 0 0
W. Banks	297 17 6	E. Triggs*	240 10 0
Johnson & Co.	278 0 0	Jones & Groves	239 0 0
Rice & Son	277 0 0		

DEMPSEY-STREET.—Cleaning interior:—

A. E. Symes	£280 0 0	S. H. Cosfield	£210 0 0
J. F. Holliday	249 6 0	G. Barker	186 10 0
D. Gibb & Co.	236 0 0	J. Kybett*	174 0 0
J. T. Robey	235 0 0		

FARRANCE-STREET.—Cleaning interior:—

Marsh, Tucker, & Co.	£313 0 0	J. T. Robey	£213 0 0
D. Gibb & Co.	239 0 0	J. Kybett	210 0 0
A. W. Derby	223 0 0	S. H. Cosfield*	180 0 0
J. F. Holliday	221 18 0		

GOODSON-ROAD (old portion).—Cleaning interior:—

Johnson & Co.	£295 0 0	Jones & Groves	£227 15 0
H. Line	273 0 0	Holliday & Greenwood	224 0 0
R. E. Nightingale	264 0 0	W. Brown*	198 0 0
W. & H. Castle	253 12 6		

HART-STREET.—Painting exterior:—

W. Hornett	£122 0	T. Gregory & Co.	£90 0
C. Gurling	113 10	H. J. Brown	88 0
R. E. Williams & Sons	107 0	W. Whiteley*	60 10
A. M. Sparks	98 0	W. Brown	60 0

JAMES-STREET.—Cleaning interior:—

W. Hailes & Son	£165 0 0	W. Hornett	£118 0 0
Lilly & Lilly, Lim.	154 0 0	E. B. Tucker	111 7 6
R. E. Nightingale	149 0 0	E. Triggs	104 0 0
E. P. Bulled & Co.	130 0 0	F. G. Minter*	102 2 0

KING AND QUEEN-STREET.—Cleaning interior:—

H. & G. Mallett	£300 0	E. Triggs	£209 0
Maxwell Bros., Ltd.	256 0	R. E. Nightingale	2 9 0
Holloway Bros.	225 0	D. Chartesis	188 10
W. V. Good	220 0	J. F. Ford	160 0
Heinemann & Brown	213 0		

LOWER CHAPMAN-STREET.—Cleaning interior:—

J. F. Holliday	£289 19	G. Baskes	£207 10
E. Jackson & Son	256 10	J. Kybett	226 0
D. Gibb & Co.	252 0	I. Morrison	209 10
J. T. Robey	245 0	A. W. Derby*	208 0

MOWLEM-STREET.—Cleaning interior:—

C. Wilmott	£230 0	W. Martin	£156 0
G. Summers	236 15	Unsigned	185 0
T. Nicholson	205 0	G. Baskes*	175 0

NETHERWOOD-STREET.—Cleaning interior:—

Cowley & Drake	£253 3	F. Chidley	£196 10
G. Neal	250 0	T. Cruwys	195 0
H. Eady	238 0	F. T. Chinchen	190 0
E. T. Folley	217 0	W. Chappell*	188 0
Marchant & Hirst	199 0		

PROSPECT-TERRACE.—Cleaning interior:—

F. Britton	£264 10 6	E. T. Folley	£187 0 0
J. Willmott & Sons	261 0 0	F. Newton	184 17 8
G. Foxley	241 0 0	T. Cruwys	183 0 0
T. Nicholson	210 0 0	A. M. Sparks	173 0 0
Marchant & Hirst	199 0 0	E. Flood	167 0 0
J. Morrison	188 10 0	W. Hornett*	154 0 0

RATHFERN-ROAD.—Cleaning interior and painting exterior:—

W. J. Mitchell	£359 0 0	H. Somerford & Son	£276 0 0
C. G. Jones	305 0 0	G. Kemp	273 0 0
W. Banks	299 16 6	C. S. Jans*	218 5 0
G. Summers	276 16 0		

REGENT-STREET.—Cleaning interior and painting exterior:—

C. Foreman	£300 0 0	S. E. Musgrove	£206 2 0
C. G. Jones	261 12 0	W. Brown	282 0 0
G. Summers	262 9 0	E. Proctor	280 0 0
W. Banks	313 14 6	Jones & Groves*	235 0 0

ROLLS-ROAD.—Cleaning interior and painting exterior (old portion):—

Johnson & Co., +25 per cent. on schedule	£461 12 8	W. & H. Castle	£333 19 0
G. Summers	360 5 0	C. S. Jones	306 0 0
E. Proctor	326 0 0	Holliday & Greenwood*	284 0 0
E. Triggs	306 5 0		

ST. PAUL'S-ROAD.—Cleaning interior:—

Marsh, Tucker, & Co.	£243 0	A. W. Derby	£177 0
W. G. Beaumont & Son	233 0	J. Kybett	170 0
J. T. Robey	191 0	S. H. Cosfield*	147 0
J. F. Holliday	179 10		

STANHOPE-STREET.—Cleaning interior:—

J. Willmott & Sons	£320 0 0	I. Morrison	£224 0 0
G. Foxley	279 19 0	E. T. Folley	212 0 0
F. Newton	256 12 10	W. Brown	195 0 0
Marchant & Hirst	229 0 0	F. G. Minter	188 10 0
T. Cruwys	217 0 0	F. T. Chinchen*	179 10 0

STANLEY-STREET.—Cleaning interior:—

W. Banks	£272 10	J. & A. Oldman	£272 8
S. E. Musgrove	246 9	C. Foreman	260 0
W. Brown	220 0	E. Proctor	250 0
Jones & Groves*	217 10	G. Summers	228 5

"SPRINGFIELD."—Cleaning interior:—

R. E. Williams & Sons	£209 0	Maxwell Bros., Lim.	£207 0
Holloway Bros.	256 0	Heinemann & Brown	211 0
H. & G. Mallett	235 0	Rice & Son	183 0
W. Hammond	228 0	E. B. Tucker*	174 4
Lathey Bros.	206 0		

TOTTENHAM-ROAD.—Cleaning interior of old school:—

F. Britton	£271 14 6	Stevens Bros.	£162 0 0
W. McCormick & Sons	256 0 0	W. Martin	250 0 0
T. Nicholson	180 0 0	W. H. Stephens	149 5 0
F. W. Harris	179 0 0	J. Morrison*	136 10 0
J. Grover & Son	168 0 0		

UPPER NORTH-STREET.—Cleaning interior:—

W. Banks	£250 10	J. F. Holliday	£123 0
W. G. Beaumont & Son	123 0	J. T. Robey*	111 0
D. Gibb & Co.	119 0	A. W. Derby	110 0
Marsh, Tucker, & Co.	115 0		

VICARAGE-ROAD.—Cleaning interior:—

G. Summers	£246 10 0	A. J. Fenn	£169 0 0
Thomas & Edge	235 0 0	E. Proctor	167 0 0
C. Foreman	232 0 0	J. Garrett & Son*	165 0 0
W. Banks	198 17 6		

* Accepted.

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